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A DISSERTATION UPON TEA,

EXPLAINING ITS
NATURE and PROPERTIES
By many New EXPERIMENTS;
And demonſtrating
From Philoſophical Principles, the various EFFECTS
it has on different CONSTITUTIONS.
To which is added the
NATURAL HISTORY of TEA;
AND A
Detection of the ſeveral Frauds uſed in preparing it.
ALSO A
DISCOURSE
ON THE
VIRTUES of SAGE and WATER,
AND AN
ENQUIRY into the REASONS *Why the ſame Food is not equally agreeable to all Conſtitutions.*
IN A
LETTER to the RIGHT HONOURABLE *MARY* Lady *MALTON.*

By *THOMAS SHORT*, M. D.

Venus *her Myrtle*, Phœbus *has his Bays*,
Tea *Both excells which we vouchſafe to praiſe.* WALLER.

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MVSEVM
BRITAN
NICVM

TO THE
RIGHT HONOURABLE
THOMAS Lord *MALTON*,
KNIGHT of the BATH, &c.

MY LORD,

IF an Endeavour to prevent or alleviate ſome of the various Pains and Diſeaſes of Life ſtands in need of any Protection, 'tis not poſſible to find a more proper Patron than your Lordſhip: ſince you never fail to countenance and encourage ſuch Attempts as are directed to publick Benefit, and appear in any Degree conducive thereto. That Humanity and Zeal for the Good of Mankind, which ſo remarkably poſſeſs your Lordſhip's Breaſt, will be ſure to engage your favourable Approbation of every ſuch Deſign. However trivial therefore, or inconſiderable the Subject of theſe Papers may ſeem to others, I am confident your Lordſhip will view it in another Light; if I can but convince you of its Tendency to Health, and the good Effects, which a due Attention to it may produce in different Conſtitutions.

Should any of my Readers think me unhappy in the Choice of my Subject, I am certain they will all conclude me happy in the Choice of a Patron: For however the Publick may differ, or diſpute, concerning *the* Virtues *of a certain Herb; there is no Diſpute, no Controverſy,* My Lord, *concerning* Yours. *And ſhould I particularly expatiate upon them, I ſhould be perfectly ſecure from every Cenſure, but that of your Lordſhip's: Or if any Objection ſhould be ſtarted, it would be only this, That 'tis needleſs to publiſh thoſe Praiſes, in a* Dedication, *which are univerſally proclaimed. And what Wonder,* My Lord, *if that generous benevolent Temper, ſo conſpicuous in your Lordſhip upon all Occaſions, ſhould render you the Delight of every Eye, and the Darling of your Countrey?*

Permit me further to obſerve, that whoever has the Honour to attend your Lordſhip as a Phyſician, has this peculiar Felicity; that whatever Pain or Sickneſs may befal you, ſhould his Medicines, at any Time, prove ineffectual for your Relief, they would never fail to be ſeconded and aſſiſted by the united Prayers and good Wiſhes of all that know You. So that I may juſtly apply to your Lordſhip that beautiful Expreſſion of Horace, *with the Alteration of one Word,*

—— Hominumque prodis
Publica Cura.

It is no eaſy Matter, My Lord, *to check ones Thoughts, or reſtrain their Pen on ſo agreeable a Subject; but I am obliged rather to conſider with what Patience your Lordſhip will read, than with what Pleaſure I could write upon it.*

Let me intreat your Lordſhip, not to place what I have ſaid intirely to the Account of Gratitude; for though I am infinitely indebted to your Lordſhip, and gladly take this firſt Opportunity to acknowledge it in Publick, yet my Obligations have been ſo far from making me ſay more, that they have guarded me from ſaying ſo much as I ſhould otherwiſe have done, to avoid the Suſpicion of the faſhionable Flattery, ſo diſpleaſing to your Lordſhip's Ear, which had I not been very tender of, inſtead of a ſhort Dedication, *you had been diſturbed with a long Panegyrick from,*

My Lord,

Your Lordſhip's

Moſt obliged,

and obedient Servant,

Thomas Short.

AN
INTRODUCTORY PREFACE,
CONTAINING THE
Natural History of TEA.

AS thoſe who paſs through a Crowd in Hurry and Confuſion, are uſually dazzled with the Multitude, and their Sight, fuller of Employment than Inſtruction, is led away and loſt upon the Incongruities which cluſter about it; ſo many paſs through this World, ſhifting themſelves ſuperficially through every Tumult of Objects and Ideas, till the Variety deſtroys the Faculty of Diſcrimination, and the Mind, cover'd over with the faint and broken Impreſſions of many Things, affords no faithful or diſtinct Remonſtrance of any.

But for thoſe Degrees of Knowledge, whereunto Mankind has already attained in the Works of the Creation, it has been providentially allotted that ſome of our Species in all Ages could withſtand and ſequeſter themſelves from that Multiplicity, wherewith the great Creator has enriched it, ſuitable to his own Infinity; and which otherwiſe, ſo continually ſolliciting our Senſes, would confound our Apprehenſions of them.

Thus in the loweſt, but largeſt Sphere of Life, the *vegetable World*, many learned Men, of this more patient and perſevering Genius, finding the Principles and Properties even of individual Objects too copious for them

them fully to comprehend, have with good Reaſon deſpair'd of ſucceeding better upon a Diverſity of them; eſpecially ſeeing that the meaneſt of Simples have as effectually preſerved the Fame and Memory of the Dead, as ever the moſt Sovereign Compounds have the Health of the Living. Princes themſelves, ſuch as *Lyſimachus*, *Gentius*, *Clymenos*, *Artemiſia*, and many others, might have periſhed in Oblivion long ago, had not their Diſcovery of ſome Plant, or its Virtues, entitled them to a ſignal Tranſmiſſion of their Names, in a moſt viſible and verdant Manner, I may ſay, to all Countries, and to all Ages.

Nay we read, that a certain People of *Spain* were upon no other Account famous or memorable, than for having found out the Nature and Qualities of the Herb *Betony:* And *Antoninus Muſa*, Phyſician to the Emperor *Auguſtus*, wrote a particular Book of the Virtues thereof. *Themiſton* alſo, a Phyſician among the Ancients, wrote a whole Volume on the Herb *Plantain*. And with the Moderns, Examples of this kind are numerous: Among whom I may take Notice, that Dr. *Martin Blockwich* has wrote an entire Book, and drawn a whole Diſpenſatory out of the *Elder Tree*; Dr. *Mich. Feber* has given us a Treatiſe upon *Wormwood*; Dr. *Ferdinand Hertodt* one upon *Saffron*; *Ben. Scharſius* one upon the *Juniper*; *Geo. Chriſtoph. Petrus* another on *Carduus Benedictus.* And later yet, *Joan. Franci* two Pieces, one on *Trefoil*, and another on *Wood-ſorrel.* In our own Nation, we have a Book written on *Pepper* by Dr. *Walter Baley*, Phyſician to Queen *Elizabeth*. Another by *Mackaile* upon *Mace*; Dr. *Gideon Harvey* wrote a particular Diſcourſe on the *Jeſuits Bark*; and Dr. *Sherley* has tranſlated *Mollenbroccius*'s Book upon *Scurvy Graſs.* But to deſcend yet nearer to our Purpoſe, Dr. *Stubbs* has publiſh'd a Book upon *Chocolate*; Mr. *Bradley*, the Botanick Profeſſor at *Cambridge*, upon *Coffee*; and Dr. *Ovington* upon *Tea*, &c.

But this, and ſeveral other *European* Authors, who have publiſh'd ſeparate Tracts upon this *Indian* Plant, have implicitly taken their Materials upon Truſt, either from ſuch Travellers as have obſerved only the Deſcription, Culture or Uſe of it, more peculiar to the *Eaſtern* Countries, or from the Merchants, and ſuch as have endow'd it with Virtues at Random, to enhance their own Importations. And even ſuch as have pretended to give us its medicinal Qualities, have afforded us very little ſatisfactory Light into its Principles, and yet a leſs rational Account why or how we are to expect ſuch agreeable and ſurprizing Effects from its Uſe; not having adapted it to different Conſtitutions, Ages, Climates, Sex, and different Exerciſes of Life: So that we know of nothing to this Day, either in Food or Phyſick, which anſwers this Variety to the

Advantage of all; for does not *Tea* throw ſome Perſons into Vapours, affect their Complexion, Spirits, Nerves, ſo as to apprehend themſelves either dying, or dangerouſly ill? In others, it ſtruggles againſt Retention, gives them the Cholick, or Gripes; and affects not a few with Tremors, *&c.* Nor, as far as I can remember, have theſe Authors proportion'd its Strength, Quantities and Uſe, to any diſtinct or deſigned Purpoſes; wherefore, I ſee no Reaſon to retract the following Diſcourſe as an unneceſſary Repetition; but rather enough to wonder, that out of ſo much as has been writ upon *Tea*, we ſhould find ſo little to the Purpoſe.

For I hope to prove that the various Conſiderations which have been offer'd, are not ſufficient in Reſpect to the Plant it ſelf, much leſs to the People, the different Nations and Conſtitutions that have accuſtom'd themſelves to it; and ſince the Infuſion hereof is become a Liquor ſo univerſal, 'tis reaſonable the Knowledge of its Nature and Virtues ſhould be ſo too. It has ſo ſingularly prevail'd in *England*, for theſe forty or fifty Years paſt, among all Perſons, (except of the very loweſt Rank) and has been ſo taking with the fair Sex, that 'twere a Shame our Examination and Underſtanding ſhould not bear ſome Proportion to the Uſe and Preference we have made of it.

Whoever well conſiders, what a ſuperior Figure this humble Shrub makes in Commerce, what an important Article 'tis in the Traffick of the *Eaſt-India* Companies, what a great Revenue the Duty upon this little crumbled Leaf returns to the Crown of *England*, whereby the general Taxes are ſo much leſſen'd to the Poor; whoever further obſerves, after all this, the Trade it variouſly advances, the Equipage, and all its Concomitants; and laſtly, the Societies it aſſembles, there being more than three thouſand Houſes of Reception for them in *London*, as a certain Author computes[a], where this Liquor is daily drunk; whoever would remark the Buſineſs, Converſation and Intelligence it there promotes, as alſo the Expence and Debauchery it prevents, will readily conclude with me, that this, as well as other Things, demands our Obſervance and Regard, not according to the ſimple Appearance it makes, but the Conſequences which flow from it.

What we call *Tea*, the *Japaneſe* call *Tcha*, *Tchia*, *Tſjaa*, and the *Chineſe*, *Thee* or *Thea*. Its Leaf is neither like that of our wild *Daiſy*[b], nor that of the *Myrtle*[c], which Miſtake made the Jeſuit *Trigantius* think, that ſeveral of our *European* Woods and Foreſts abound with a true *Tea* [d]; but when young and tender, it comes neareſt, except in Colour, the Leaf of the common *Spindle-tree* with red Berries; and, when full grown, the Leaves of the *Morella Cherry-tree* [e]. Neither the *Chineſe*, nor *Japaneſe*, in their learned Languages, have any hieroglyphick Character for *Tea*, which at once might give ſome Idea of the Thing expreſs'd, though they have ſome Characters, which either merely expreſs the Sound of the Word, or allude to the Virtues and Deſcription of the Plant. Of the firſt Sort is *Tcha*, which ſome learned Men think comes from the ancient *Tartarian* Word *Cha:* And upon this Account, and alſo becauſe ſeveral Merchants yearly export large Quantities of *Tea* out of *Tartary* into *Perſia*, they will have the *Tea-tree* to be originally a Native of *Tartary*; and that the *Chineſe*, at, or ſince their Conqueſt of *China*, have learned the Uſe and Virtues of this Leaf from the *Tartars*, in whoſe Countrey they ſay it grows plentifully [f]. But the too great Vivacity of theſe Mens Genius, deſtroys their own Allegation: For, 1. Does great Plenty of *Tea* grow in *Tartary*, and is it as little valued? How is it probable then that the *Tartars* ſhould recommend that to the *Chineſes*, ſeeing they were Strangers to its Virtues and Uſes themſelves? 2. The *Tartar* King of *Ninchi* began not his firſt Incurſions into *China* before the Year 1616, and then he only made himſelf Maſter of a Province or two, and ſo ſent a Letter to the Emperor of *China*, petitioning for an Abatement of the grievous and inſupportable Taxes impos'd by the *Chineſe* upon *Tartary*, (which was then under their Government) for Prevention of the Barbarities committed by the Emperor's Army kept in *Tartary*, and Satisfaction for his Father's Murder: But the Emperor, being above fourſcore Years old, neglected his Letter, and return'd no favourable Anſwer to his Requeſts; after which there was a long War betwixt them, till the Year 1650, when the *Tartars* made themſelves entire Maſters of that vaſt Empire. But *Bontius*, and ſeveral others who travell'd and wrote before the End of the ſixteenth Century, mention the general and great Uſe of *Tea* at that Time, which was above twenty Years before the *Tartars* came into that Countrey.

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[a] *Dictionaire univerſ. de L'Abbé* Furetiere, *Fol.* 1725. Tom. 3. *en l'Article de cette Plante.*

[b] *Bontius, de Med. Indior. Dialog.* 6to.

[c] As *Sim. Paul de Thee*, p. 19, 20. would have us believe.

As to theſe Characters, which allude to the Virtues and Deſcriptions of *Tea*, ſuch is that of the Eye-brows of *Darma* [g], uſed by the *Japaneſe*.

The

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[d] *Trigant. de Reg. Chin.* lib. 3.

[e] *Kempſer*'s Travels, Appendix to *Vol.* II. p. 1.

[f] *Sim. Paul de Thee*, p. 25. *Clearius*'s Ambaſſadors Travels in *Perſia*, p. 241.

[g] This *Darma* was an eminent Pagan

Saint,

The fore-cited Author[h] having given us the beſt and fulleſt Account of the Culture, Growth, Preparation and Differences of *Tea*, I ſhall here acknowledge my Obligation to him for ſeveral Things in the following Diſcourſe. The *Tea-tree* is a Shrub that grows but ſlowly; it riſes to a Fathom high, and higher, and has a black woody irregular branched Root: Its Bark is dry, thin, weak, Cheſnut colour'd, greyiſh on the Stem, and ſomewhat inclined to Green on the Extremities of the Twigs; 'tis firm, and adheres cloſely to the Wood, and is covered with a very thin Skin, which ſometimes looſens of itſelf as the Bark grows dry; this being removed, the Bark appears of a greeniſh Colour, and ſmells ſomewhat like the *Hazle-tree* Leaves, but more diſagreeable and offenſive, and of a bitter, nauſeous and aſtringent Taſte.

The Wood is hard and fibrous, of a greeniſh Colour inclining to white, of a very offenſive Smell when green, the Pith, which is very ſmall, ſticks cloſe to the Wood.

The Branches and Twigs are many in Number, growing without any Order, ſlender, of different Sizes, though ſhort in the main, wanting thoſe Rings which in Trees and Shrubs are the Mark of their annual Increaſe; very thick beſet with Leaves, without any Order, on ſhort, fat, green Foot-Stalks, roundiſh and ſmooth on the Back, but hollow, and ſomewhat compreſs'd. On the oppoſite Side ſtand the Leaves: Theſe are of a middle Subſtance between membranaceous and fleſhy; in Subſtance, Shape, Colour, and Size, when full grown, like thoſe of the *Morella Cherry-tree*,

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Saint, who lived about the 519th Year of *Chriſt*: He was the third Son of *Kaſinwo*, an *Indian* King, and a kind of Pope, being the 28th Succeſſor of the Holy See of *Siaka*, the Founder of their Paganiſm, who was a Negroe born, 1023 Years before *Chriſt*. *Darma* was a moſt auſtere Man, who, from an Aim at perfect Holineſs, reſolved to deny himſelf all Reſt, Sleep, and Relaxation of his Body, and conſecrate his Mind Day and Night, without Intermiſſion, to God: After he had watched many Years, one Day being weary and over-faſted, he unluckily dropt aſleep; awaking the next Morning, full of Sorrow for breaking his ſolemn Vow, he cut off both his Eye-brows, thoſe Inſtruments of his Crime, and with Indignation threw them to the Ground: Returning the next Day to the ſame Place, behold, out of his [illegible]-brows were grown two beautiful *Tea* Shrubs. *Darma* eating ſome of the Leaves, was preſently fill'd with new Joy, and Strength to purſue his divine Meditations: He preſently communicated to his Diſciples the great Benefit he found from *Tea*; which they publiſh'd to Mankind. Thus were the Virtues of *Tea* diſcover'd to the World, ſay the *Japaneſe*. This Fable might ariſe either from its Serviceableneſs in ſome Diſeaſes of the Eyes, or from its Force in preventing too much Drowſineſs in ſuch an auſtere Man: And its Uſe at firſt (as of all other Things) was no doubt accidental. Hence it's brought in as produc'd by a Miracle, wrought above 1200 Years ago. However this ſufficiently ſhews, that it is no new Diſcovery to the *Indians*, nor are they obliged to the *Tartars* for it.

[h] *Kempſer*, in the Appendix to the 2d Vol. of his Hiſt. of *Japan*.

Cherry-tree, but when young and tender they reſemble (except in Colour, as before remark'd) the *Spindle-tree* with red Berries, called *Euonymus.* The larger Leaves are two Inches long, and one broad, or but little leſs; from a ſmall Beginning they become roundiſh and broader, and then taper into a ſharp Point; ſome are of an oval Shape ſomewhat bent, and irregularly undulated lengthways, depreſs'd in the Middle, with the Extremities roll'd backwards; they are ſmooth on both Sides, of a dirty green Colour, ſomewhat lighter on the Back, where the Nerves being raiſed pretty much leave ſo many Hollows or Furrows on the oppoſite Side; they are ſerrated or indented, the Teeth being a little bent, hard, obtuſe and ſet cloſe together, but of different Sizes; they have one very conſpicuous Nerve in the Middle, to which anſwers a deep Furrow on the other Side; 'tis branched on each Side into five, ſix, or ſeven thin tranſverſe Ribs of different Lengths, and bent backward near the Edges of the Leaves; ſome ſmaller Veins run between the tranſverſe Ribs.

The Leaves, when freſh, are deſtitute of Smell, and are not ſo ungrateful to the Taſte as the Bark, being aſtringent indeed and bitteriſh, but not nauſeous. They differ in Subſtance, Size, and Shape, according to the different Age, Situation, and Nature of the Soil wherein they grow: Were they infus'd and drank when they are freſh or green, they would much affect the Body, eſpecially the Hands; for being Narcotick, they wou'd occaſion a trembling and convulſive Motion in the Nerves, but this Quality they loſe in the drying and rolling, which expreſſes that clammy, yellowiſh, corroſive Juice that cauſes theſe Tremors; yea, ſo corroſive ſometimes is this Juice, that it excoriates the Hands of the Roaſters and Rollers.

The Branches are thick beſet with Flowers, one or two together, much like our wild Roſes, an Inch or ſomewhat more in Diameter, having little Smell, compos'd of ſix round, hollow *Petala* or Leaves, ſtanding on Foot-Stalks of an Inch long, which from a ſlender beginning inſenſibly grow larger, and end in an uncertain Number, commonly five or ſix, of ſmall, round *Squamæ*, or Leaves, which ſerve inſtead of the *Lalix.* Theſe Flowers continue growing till late in the Winter, one or two whereof are generally ſick, ſhrunk, and fall far ſhort of the Largeneſs and Beauty of the reſt; they have a very diſagreeable bitteriſh Taſte, which chiefly affects the Baſis of the Tongue.

Within the Flower are many white *Stamina*, exceeding ſmall, as in Roſes, with yellow Heads ſhap'd like a Heart; in one Flower there are ſometimes one Hundred and thirty of theſe *Stamina.* The Flowers are ſucceeded by great Plenty of Fruit which is unicapſular, bicapſular, but more commonly tricapſular, like the Seed-Veſſels of the *Ricinus*, or *Palma*

Chriſti, compos'd of three round *Capſulæ* of the bigneſs of wild Plums, grown together to one common Foot-Stalk as to a Center, but diſtinguiſh'd by three pretty deep Partitions; each *Capſulæ* contains a Husk, Nut, and Seed: The Nut is almoſt round on one ſide only, where the three *Capſulæ* grow together, ſomewhat compreſs'd, cover'd with a thin, hardiſh, ſhining, Cheſnut-colour'd Shell, which being crack'd, diſcovers a reddiſh Kernel of a firm Subſtance like Filberds, at firſt of a ſweetiſh, but not very agreeable Taſte, which ſoon grows rougher and bitter, like that of the *Cherry-Seeds*, making People ſpit very plentifully, and very nauſeous when they fall down into the Throat, but this ill Taſte quickly goes off. Theſe Kernels contain a great Quantity of Oil, and often turn rancid, which is the Reaſon why ſcarce two of a Dozen will germinate when ſown, and this probably has occaſion'd the Fruſtration of our *European* Attempts to raiſe this Shrub.

The Natives do not allow this Shrub any particular Gardens or Fields, but plant it round the Hedges and Borders of their other Fields, with Regard to the Soil; nor do they lay their Seeds in Rows, which would make it grow up into Hedges, but at ſome Diſtance from each other, that when the Shrub comes to ſpread, the growing too cloſe together may not hinder their plucking off the Leaves. They put at leaſt ſix, and moſtly twelve Seeds, as they are contained in their Seed Veſſels, into one Hole made about five Inches deep, becauſe few are found to germinate.

As the *Tea*-Buſhes riſe in *Japan*, the more induſtrious People fatten the Soil where they grow, once a Year, with humane Dung mix'd with Earth. The Shrub muſt at leaſt be three Years old before the Leaves are pluck'd, and then it bears Plenty of very good ones; in ſeven Years Time, or thereabout, the Shrub riſes to a Man's height; but then it grows but ſlowly, and bears few Leaves; but if cut down to the Stem, new Sets of Branches and Twigs ſhoot out thicker, and much more numerous than before, and all nouriſh'd by the ſame Root. The young Shoots, as they come up the firſt Year from the Stem, are always fewer in Number, but fatter and larger than thoſe which ſucceed them; in Proceſs of Time they become branched. When ſeveral Seeds are put together into one Hole, ſometimes two or three Shrubs come up together ſo cloſely joyn'd, that the ignorant or leſs attentive would readily take them for one Stem.

When the Leaves are ready, the Labourers, hired for that Purpoſe, do not pluck them by handfuls, but ſingly, one by one, leaſt they ſhould tear them: Neither do they gather them all at one Seaſon. They begin their firſt gathering at the middle of the firſt Moon, preceding the vernal Equinox, which is the firſt Month of the *Japaneſe* Year; the Leaves then are very few, but very tender and young, being only of two or three Days growth, and ſcarce fully open'd; theſe are accounted the beſt, and ſold deareſt of all, being bought by their Princes and great Men at a high Rate, and are therefore call'd the Flower of *Tea*, which probably occaſion'd that Miſtake, that the *Indians* uſed the Flowers of *Tea*, which they do not. This firſt Sort is called *Voui*, *Bui*, or *Bohea Tea* of the *Chineſe*. The next or ſecond Gathering is often ſold for the firſt, and therefore the ſmaller are carefully pick'd and ſeparated from the larger and coarſer Leaves. Their third and laſt Gathering is in the third *Japaneſe* Month, or our *June*; this is moſt plentiful, the Leaves being now come to their full Growth, both as to their Number and Largeneſs; many paſs the two former, and depend wholly on this Gathering, the Leaves whereof are all ſorted into their different Claſſes of Size and Goodneſs, which the *Japaneſe* call *Itziban*, *Niban*, and *Sanban*, that is, the firſt, ſecond, and third; the laſt is the coarſeſt of all, being full two Months grown, and is the Tipple of the Vulgar. Theſe Day-Labourers, which are hired to gather the *Tea*, will each of them gather nine or ten *Catti* apiece in a Day, that is twelve Pound and a half of *Dutch* Weight, for one *Catti* is a *Dutch* Pound and a Quarter; whereas their own Domeſticks, who are not accuſtomed to it, would not pluck above two or three *Catti* apiece in a Day.

The *Japaneſe* call the firſt gather'd *Tea*, *Ficki Tſjaa*, or Ground *Tea*, becauſe they grind it to Powder, and ſip it in hot Water. The ſame Sort is alſo called *Udſi Tſjaa*, and *Tacke Sacki Tſjaa*, from the particular Places where it grows, the Soil of thoſe Places being very good, and becauſe it is gather'd off Shrubs of three Years old, which are then at their greateſt Perfection; for the Soil and Age of the Shrub contribute much to the Goodneſs of the Leaf, as well as the Growth and Largeneſs thereof, though the laſt is not always a Proof of their Goodneſs, except they be tender alſo.

Udſi is a ſmall Town, ſituated in a Diſtrict of the ſame Name, near the Sea-Coaſt on one Side, and *Miaco* (the capital City and Reſidence of the eccleſiaſtical hereditary Emperor of *Japan*) on the other Side: This Climate is exceeding favourable for the Culture of *Tea*, which is reckon'd the beſt of the Countrey, and is drunk at the Emperor's Court, and in the Imperial Family. The Shrubs are planted as it were in pleaſant Walks on a Mountain, incloſed with Hedges for their Security, and frequently cleans'd, that no Dirt may be found on their Leaves. Two or three Weeks before the Labourers begin to gather them, they muſt abſtain from eating Fiſh, or any unclean Food, leſt the Impurity of their Breath ſtain the Leaves, or injure their Goodneſs; and when they are gathering, they muſt bath themſelves twice or thrice a Day, either in a hot Bath or River, and gather with Gloves on, not being allowed to touch the Leaves with their naked Hands: Which being thus gather'd, and prepared, are put into Paper Bags, and theſe into larger Earthen or Porcellane Pots, fill'd up with common *Tea*, for the better Preſervation of the other; which being thus pack'd, the Emperor's chief Surveyor of the Works of this Mountain, ſends them to Court under a good Guard, with a numerous Attendance, for the Emperor's greater Grandeur. This raiſes the Price of this *Imperial Tea*, from forty two to fifty ſix Crowns a Pound; nay, the chief Surveyor ſometimes charges it at a hundred or a hundred and forty Crowns, three or four *Catti* of it being ſent to Court under a Guard of two hundred Men to attend it: A ſingle Diſh of it is ſometimes valued at twelve Shillings.

The Leaves of the ſecond *Tea* are called *Tootsjaa*, or *Chineſe Tea*, being prepared after the *Chineſe* Manner. The *Tea*-Merchants and Shopkeepers of *Japan*, divide this into four others, which differ in Goodneſs and Price; the firſt gather'd when the Leaves juſt appear; then every young Branch bears not above two or three, and theſe yet un-opened; one *Dutch* Pound and a Quarter of this is ſold from to thirty *Dutch* Stivers: The Leaves of the ſecond Sort are older and more grown, though gather'd not long after the firſt, the ſame Quantity of this is ſold at forty or forty five Stivers. The Leaves of the third Sort are ſtill older and larger, and worth from about twenty three to thirty five Stivers, or Silver *Maas*, *per Catti*. The greateſt Quantity of the *Tea* imported into *Europe*, is of this Sort, and ſold by the *Dutch* at ſix or or ſeven Gilders *per* Pound: Thoſe who cry it about the Streets in *Japan*, ſell it for three *Maas*, or twenty four Stivers *per Catti*, for 'tis of this that the Generality of the Natives drink.

The third ſort of *Tea* is *Ban Tsjaa*, theſe Leaves being of the laſt Gathering, are moſtly too groſs and coarſe to be dry'd in Pans over the Fire, after the *Chineſe* Manner; but being for the Vulgar, Labourers, and Countrey-People, are prepared any how. The longer this ſort is kept, the better it is; its Virtues being fix'd in the groſs Leaves, are not ſo readily loſt, either by being expoſed to the Air, or by boiling; but the Leaves of the other two having extreme volatile Parts, ſuffer great Prejudice by being expos'd to the Air, infus'd or boiled.

When the Leaves are gather'd, they are brought to the Work-houſe to be roaſted, the ſame Day, over a Fire in an Iron-Pan; for if they lie long, or be laid on large Heaps, or kept over Night, they would heat, turn black, and loſe much of their Virtue; and if they do heat at any

Time, they preſently fan them, and ſpread them thin on the Ground to cool them. The Roaſters put ſeveral Pounds of the Leaves into the Pan at once, which is ſo heated, that the Leaves, though turgid and juicy when put in, yet ſoon crack at the Edges of the Pan: And that they may be thoroughly and equally dryed, the Roaſter conſtantly ſtirs them with his Hands, till they are as hot as he can poſſibly bear them, and then he takes them out with a Shovel like a Fan, and pours them on a Mat, when the Rollers roll them with the Palms of their Hands, in ſmall Parcels, till they are equally curld; and ſuch a ſharp, yellow, and greeniſh Juice ſweats out of the Leaves upon this rolling, as burns their Hands almoſt to an intolerable Degree: But ſtill they muſt continue their Work, for if the Leaves are quite cold before they are rolled, they will either not curl, or not keep it long; but the ſooner they cool after they are rolled the better, for then they keep their Curl the longer; and therefore they have one to fan while another is rolling them. When they are cold, the Roaſter (who is the chief Maſter of the Workhouſe) puts them a ſecond Time into the Pans, and roaſts them again, till they have loſt all their Juice; and now he ſtirs them more ſlowly than before, leaſt he put them out of their Curls, though ſome Leaves will ſpread in Spite of all his Care. After this roaſting they are carefully roll'd again the ſame Way. If after this they are fully dry, they have done; if not, they are deliver'd a third Time to the Roaſter, and then his utmoſt Care and Skill is neceſſary, leſt he burn or blacken the Leaves. Some curious Perſons roaſt and roll them ſix or ſeven Times, but uſe a ſlower Fire, that they may keep their fine Greenneſs; and becauſe of the exceeding ſharp Juice which ſweats out of them, the Pan is waſhed clean after every roaſting. The *Chineſe*, before they roaſt their Leaves of the firſt gathering, put them into hot Water about half a Minute, that they may ſooner and more fully exſude their narcotick Juice.

When they have done roaſting and rolling them, they pour them out upon a Mat, and ſort them a ſecond Time into different Claſſes according to their Goodneſs, and ſeparate thoſe which are leſs curl'd, or too much burnt, from the reſt. Countrey-People roaſt their Leaves in earthen Kettles, and as they are at leſs Expence this Way, ſo they can afford them cheaper, though they are not much worſe. The *Tea* muſt be all roaſted in the Night, being gathered in the Day, which makes the Preparers of it complain heartily of their hard Fate. When the Leaves have been kept ſome Months after the firſt roaſting, they are roaſted again, to deprive them of any remaining Moiſture, or what they may have ſince imbibed from the Air.

As ſoon as the *Tea* is cold after this ſecond roaſting and curling, the *Chineſe* put it up into Boxes of coarſe Tin, which are incloſed in wooden Cheſts, or Caſes of Fir, all the Clefts whereof are carefully ſtopt with Paper, that the Air of thoſe Climates may not diſſipate its extreme ſubtile and volatile Parts, and in this Manner we have it imported hither. Thoſe Tubs, or Cheſts, one with another, contain about a hundred and twelve Pounds of *Tea* apiece, and ſometimes ſix or ſeven thouſand of thoſe Cheſts are retain'd from the firſt, and put up in a ſecond or after-Sale of the *Engliſh Eaſt-India* Goods[i]; one of their Ships ſometimes imports four hundred thouſand Pounds for one Article of her Cargo[k].

The common People of *Japan* keep their own *Tea* in large earthen Pots with narrow Mouths; but the Emperor has his in *Maatſubo's*[l], which they think not only preſerve but improve its Goodneſs: However they will keep powder'd *Tea* many Months without the leaſt Hurt or Damage.

Tea has been known in *Europe* above a hundred and twenty Years, for the *Dutch Eaſt-India* Company, (who firſt imported, and rais'd its

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[i] In *September* the laſt Year 1728, 6867 Cheſts were put up at a ſecond or after-Sale, which amount to 769104 *lib.* of *Tea*, the Duty whereof is about 153820 *l.* Sterling.

[k] The Bill of Cargo of the *Cæſar*, of *May* 17. 1726, has 358100 *lib.* of *Tea*, for one Article, the Duty of which is 71620 *l.* Sterling.

[l] *Maatſubo*, is a kind of Porcellane Pots or Veſſels, ſought for by divers, and found among the Rocks of the Sea, near the Iſland *Formoſa*, where the once rich and flouriſhing Iſland *Mauvi* ſtood, (which had the beſt Earth, and the moſt ingenious noted People for making the richeſt and fineſt Porcellane in the World) but 'tis long ago ſunk, and only ſome ſmall Tops of the Rocks are to be ſeen at low Water. The King of this Iſland, being a pious Man, was warned in a Dream by the Gods, that when the Faces of the two famous Images, which the People worſhipped, were red, the Iſland ſhould ſuddenly be deſtroyed for the great Wickedneſs of its Inhabitants. Two notorious Villains, hearing of the King's Dream, went in the Night and colour'd both the Faces of the Images red; the King hearing of it, took Shipping, immediately went off, and arrived in the South of *China*, where the Day of his Arrival is annually obſerv'd. As ſoon as he was gone, the whole Iſland ſunk, and all its fine Porcellane with it; and theſe Veſſels, taken up by Divers, are ſold at an extravagant Rate, *viz.* from twenty to a hundred or two hundred *Thails* apiece; theſe are ſmall, have ſeveral Cracks and Fiſſures, and many Shells ſtick to them; but ſuch as are large and ſound are the Emperor's Property only, and are purchaſed at three, four, or five thouſand *Thails*: A *Thail* is ten Silver *Maas*, and ten *Maas* are ſeventy *Dutch Stivers*, twelve of which are equal to thirteen Pence of our Money.

Theſe muſt be the *Tea*-Pots, which *Maudelſlo* ſays (in his Travels to the *Indies*, p. 156.) are worth between ſix and ſeven thouſand Pound Sterling apiece; they are ſhap'd like ſmall Barrels, or Wine Veſſels, of a whitiſh Colour inclining to green, with a ſhort narrow Neck. *Kempſer*, Append. to Hiſtory of *Japan*.

Reputation in *Europe)* was founded *A.D.* 1602. upon a Contribution at their firſt Settlement of 6459840 Florins. The *Engliſh Eaſt-India* Company was form'd near the latter End of Queen *Elizabeth*'s Reign, their Charter being dated *A.D.* 1599, and their firſt Fleet ſet out in 1600. But they made no Figure before King *James* I. beſtow'd his Favours upon them. The *French Eaſt-India* Company was eſtabliſhed in 1664.

The *Dutch*, in their ſecond Voyage to *China*, carry'd thither good Store of dried Sage, and exchanged it with the *Chineſe* for *Tea*; they had three or four Pound of the laſt for one Pound of the firſt, calling it a wonderful *European* Herb, poſſeſs'd of as many Virtues as the *Indians* could poſſibly aſcribe to their *Shrub-Leaf*: But becauſe they exported not ſuch large Quantities of Sage as they imported of *Tea*, they bought a great deal, and gave eight Pence or ten Pence a Pound for it in *China*[m]. And when they firſt brought it to *Paris*, they ſold it there for thirty Livres a Pound[n], though 'twas not of the beſt ſort, for that comes from *Japan*, and has often been ſold at a hundred Livres a Pound[o]: But about thirty Years ago, the *Chineſe* ſold it at three Pence, and never above nine Pence a Pound, but frequently mix'd with other Herbs to increaſe its Quantity[p].

Though it ſeems to have been brought into *England* in the Reign of King *James* I. yet 'twas little taken Notice of before the Uſurpation, when it was imported in ſuch large Quantities, that it came under the Cognizance of the Government; for in 1660, a Duty of eight Pence *per* Gallon, was laid on the Liquor made and ſold in all Coffee-houſes[q], which was no ſmall Prejudice to the Liquor, and Inconvenience to the Drinker, for the Exciſe Officer was to ſurvey it before any ſhould be ſold, and was not oblig'd to attend above once or twice a Day. And ever ſince that Time the Duty upon *Tea* has been one of the hereditary Cuſtoms to the Crown, though the Parliament has at ſundry Times, by different Acts, fix'd divers Duties upon it, but the laſt is the moſt commodious of all, being only four Shillings *per* Pound, payable by the Sellers of the Leaf, no Duty nor Inſpection to be made of the Liquor or its Makers.

Japan, *China*, and *Siam*, are the only Places which afford us *Tea*, and that from the firſt is moſt valu'd, being uſually of a finer clear Green, having a ſmaller Leaf, and more delicious Smell and Taſte than the other;

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[m] Father *Alex. Rhodes*.

[n] *i. e.* about fifty Shillings.

[o] About 8 *l.* 6 *s.* 8 *d.*

[p] *Kempſer*'s Hiſtory of *Japan*.

[q] But whether this was the firſt Impoſt, or whether it was only renewed, as the Duty on Malt-Liquor was, upon the Parliaments annulling all *Cromwell*'s Acts and Laws, I cannot ſay.

which raiſed its Price in *France* to 200 Livres *per* Pound, till Coffee and Chocolate were more generally us'd, which reduc'd both the Price and Eſteem of the former [r].

Tavernier ſays, the King and Nobility of *Tunquin* prefer the Flower of *Tea* as moſt wholeſome and pleaſant, which makes it dearer and more valuable; for, ſays he, as much of this Liquor as will fill one of our ordinary Beer-Glaſſes is there worth a *French* Crown. But *Conorius*, who liv'd ſeveral Years in *Japan*, aſſures us, that the Flowers are of no Eſteem, the main Virtue being lodged in the Leaf: And what led *Tavernier*, and ſeveral others into this Miſtake, was, that the ſmall Leaves which are firſt pluck'd, when they are not above forty eight or fifty Hours old, are called the Flower or Prince of *Tea*, being moſt valu'd and ſold at an extravagant Rate, *viz.* from 45 to 140 Crowns *per* Pound.

We have only two Sorts imported to us, *viz. Green* and *Bohea*; the *Europeans* contracted their firſt Acquaintance with, and moſtly uſed the *Green* [s]: Then *Bohea* took place of it, probably becauſe the *Chineſe*, if they are weak, chiefly confine themſelves to this Kind, and aſcribe to it a ſingular Virtue of Healing and preventing Diſeaſes, and applaud it as the Balſam of Life to the human Machine; but we find, generally ſpeaking, that *Green Tea* anſwers our Purpoſes better, and is therefore chiefly uſed by the Quality, which has reduced the Price of *Bohea*, and raiſed this.

Of *Bohea*, called by the *Chineſe Voui*, or *Bui*, we have the following Sorts imported, *viz.* 1. *Pekoe*, which has the moſt pleaſant and delicate Flavour of all this firſt Claſs; its Leaf is very ſmall and black, and has many ſmall white Flowers mix'd with it; its Liquor is not of ſo deep a Tincture as the reſt, and creams briſkly when pour'd out; the Water muſt ſtand on it a conſiderable Time to draw out its Virtues, and 'twill bear four or five ſundry Waters. The cloſer Connection, or Coheſion of its Principles, renders it more Balſamic, and alſo hereby it grows better by keeping, which is the Reverſe of *Green Tea*. The Price of this at preſent is 15 *s. per* Pound with us. 2. *Congo*, which has a larger Leaf, and is of a deeper brown Colour than the former; this will bear five Waters, but then they muſt not ſtand long upon it, for unleſs the Water is preſently pour'd off, the whole Strength of the *Tea* will be drawn out at once. Hence, if you mix *Pekoe* and *Congo*, you ſhall have an admirable fine *Tea*; you have all the Goodneſs of the laſt in the firſt two Waters, and of the firſt in the laſt two or three, but even then the

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[r] See *Pomet*'s Hiſtory of Drugs, *p.* 84.

[s] See Append. to *Schroder*'s Pharm. *p.* 8.

[t] This is all bought at *Nankin*, as *Chambers* ſays in his *Cyclopædia*, Tom. 2. the *Dutch* have but lately introduced it into *Europe*.

Water ſhould not ſtand long. This is ſold at 14*s.* a Pound. 3. Common *Bohea* is blacker and larger leav'd than either of the former, and ſmells and taſtes more faint, not unlike dry'd Hay; it gives the Water the deepeſt Tincture of all, and two or three Waters draw out its Strength and Virtue. Price 12*s. per* Pound.

The different Sorts of *Green Tea* are theſe, 1. *Hyſſon,* ſo called from the Name of a rich *Eaſt-India* Merchant, who was the firſt Importer of it; it has a ſmaller, harder, and more curled Leaf than the common *Green*; 'tis of a more blue Colour, taſtes criſp in the Mouth when chew'd, and afterwards looks green upon the Hand: It ſcarce tinctures the Water (with a pale greenneſs) when ſtrongeſt, and yet is of a moſt delicious Taſte. All, or moſt, of the Leaves ſhould be of a clear bluiſh Green; for if they ſeem decay'd, or look brown or blackiſh, the *Tea* is old, and has loſt Part of its Virtue: Or if you pour out a Cupfull of its Liquor, and let it ſtand all Night, if its Colour continues, then 'tis good; but if that fades, its Virtues are gone, eſpecially if its delicate Smell and bitteriſh-ſweet Taſte be impair'd. This *Tea* will bear four or five Waters, and requires not ſo much *Tea* to the ſame Quantity of Water, as the other. 'Tis ſeldom us'd alone, but mixt with common *Green*, one Part to three of the laſt. The Price is 36*s. per* Pound. 2. *Imperial Green Tea*; this is of a lighter green Colour, has a more flat, large, looſe Leaf than either the laſt or thoſe which follow: 'Tis green to the Eye, criſp in the Mouth, and pretty pleaſant to the Smell, but has the fainteſt Taſte of any *Green Tea.* Its ſpecifick Gravity is the leaſt of all, its Principles ſit looſeſt, and therefore two Waters will draw off its Strength. Price 18*s. per* Pound. 3. Common *Green Tea* of the better Sort, has not ſo large a Leaf as the laſt, is of a darker green Colour, rougher, and more aſtringent to the Taſte; 'twill bear three or four Waters. Price 15*s. per* Pound. 4. Ordinary *Green Tea* is yet of a darker (or if very coarſe, of a light whitiſh Green) Colour, neither ſo pleaſant to the Taſte nor Smell, and is ſooner drawn off. Price 13*s. per* Pound. 5. *Dutch Bloom* is a very fine *Green Tea*, and bears a proportionable Rate; 'tis, probably, one of the *Japan Teas*, but having ſeen none of it, I will not pretend to deſcribe or judge. 6. There grows alſo a very rough, coarſe, unpleaſant *Green Tea* in the *Northern* Province of *Xenſi*, which the hardy *Canibal Tartars*, the preſent Maſters of *China*, uſe, whoſe delicate Diſh is raw Horſe-fleſh, and when their Dinner ſits uneaſy upon their Stomach, they drink of this, and it rarely fails to reſtore their Appetite and Digeſtion.

The ſubtle *Chineſe* have ſeveral Ways to falſify *Tea*, both in preparing and putting of it up, a Detection whereof will be no leſs advantagious to the Merchant, than ſatisfactory to the Drinker. 1. They formerly us'd to mix a good many Leaves of other Shrubs with it, though one would think the Profit would ſcarce anſwer their Labour. The Fraud, if not viſible at firſt to the Eye, is thus diſcover'd: Make a Pot of genuine *Tea*, and another of the ſuppoſed adulterated Leaves, pour out a Diſh of each„ and put a Grain and a half of *Blue Vitriol* or *Coperas* into each Cup; this turns the *Green Tea*, if genuine, and in a good Light, of a fine light blue, and *Bohea* of a deep blue next to black; (but if this be done by Candle-light, both will appear black;) if they be adulterated they will have a Mixture of other Colours in them, as green, yellow, black, greyiſh, *&c.* 2. They us'd to put a coarſe *Tea* in the Bottom and Middle of their Totenage, and a fine *Tea* at Top, or put a fine *Tea* both at Top and Bottom, and a coarſer in the Middle, 'till the Buyer detected that alſo. 3. They then fell to dying *Tea* with *Japan* Earth, which gives the Leaf the Colour, and the Infuſion the Tincture of *Bohea*. One would wonder where they ſhould find their Profit in this, if the *Green Tea* was good, eſpecially now when this laſt is ſo much dearer than *Bohea*. Either the laſt muſt be of more Account in other Countries, or that which they dye muſt be ſpoil'd in the Preparation, or damag'd by keeping: However this profuſe Uſe of *Japan* Earth, ſeems to be the Reaſon of its preſent great Advancement from 4*d.* to 18*s.* a Pound. But the following Marks will plainly diſcover this Fraud, 1. A leſſer Quantity of this ſort of *Tea* tinges the ſame Proportion of Water of a deeper Colour than it ſhould be. 2. It tinges it, not of a dark, but more reddiſh Brown. 3. After the Leaves have been ſometime infus'd in the Water, and the Tincture is waſh'd off, they look greener than they ſhould do, if the *Tea* was good: Or, if they are damag'd for open Sale, as 'tis ſometimes the Caſe, they are black or brown, or if they were laid on a Heap and heated before roaſting, or if they have been burnt in roaſting, or got Wet after they were roaſted. 4. They are alſo much larger, being too old before they were pluck'd for *Bohea Tea*; therefore ſuch as would avoid this Cheat ſhou'd buy the leaſt Leaf. 5. The Liquor itſelf which ſhou'd have a delicate Flavour, and a ſmooth, Balſamick Taſte, is rougher and harſher to the Palate. 6. When Milk is pour'd into it, it riſes reddiſh, and not of a dark or blackiſh brown. 7. A little *Coperas* put into this *Tea* turns it into a light blue, but ſhou'd make it, if good, of a deep blue inclining to black. 8. Spirit of Salt or Sulphur put to the laſt Mixture, clears it not, whereas it ſhou'd take off even the Tincture of the *Tea* itſelf, and make it clear. 9. Spirit of *Hartſhorn* makes the *Tea* of a deep browniſh yellow after it has ſtood a little, like new drawn *Tincture of Saffron*, but here it does not.

After all, I don't ſee what harm this Cheat can do, except to ſuch as have too elaſtic Solids, and then the daily Uſe muſt tend to ſtiffen the Fibres, or contract the Veſſels more, or to them whoſe Lungs are obſtructed, or loaded with too much Matter; wherein the Perſon's Life depends upon Expectoration, and in theſe Caſes it may do much Harm, firſt, by criſping up the obſtructed Veſſels, which ſhould be relaxed; and ſecondly, by ſtopping the ſpitting, and loading the bronchial Veſſels: And indeed the chief Uſe of *Bohea Tea* ſeems to be for ſuch People, becauſe *Green* is too aſtringent for them.

But as the Natives have a Dexterity in making artificial *Bohea*, ſo they can ſend us a counterfeit *Green*, by dying the firſt with green Vitriol, which cheating Trick is eaſily diſcovered, 1. By putting a little Bit of Gall into your Liquor, for if there's any Vitriol in the *Tea*; it preſently turns it of a deep blackiſh Colour, which it ſhould not do; for Galls tincture not this Liquor, except there be Copperas firſt in it. 2. The Liquor it ſelf looks of a pale green, inclining to a bluiſh Dye. 3. Spirit of Hartſhorn dropt into this *Tea* makes it ſomewhat of a ſlight Purple Colour, and cauſes a ſmall Precipitation; whereas this Spirit ſhould make it of a deep greeniſh yellow, when it has ſtood ſix Minutes. This dying with Vitriol is a much more miſchievous Trick than the former.

The moſt likely Time for dying of *Tea* is, when they put the freſh gather'd Leaves into Water, before they are roaſted; for then they need only mix their Powder of *Japan* Earth, or green Vitriol, with that Water, and waſh their *Tea* in it, for the roaſting of it after, fixes on thoſe Colours when the Moiſture of the Plant is exhaled.

The *Chineſe*, *Japaneſe* and *Tartars*, prepare their *Tea* after different Manners; the laſt boil it in Milk, but this is very improper, becauſe, 1. Milk either blunts or ſheaths up the active, minute, ſaline Particles of the *Tea*; and therefore corpulent, cachectick, or hypocondriac Perſons ſhould neither boil it in Milk, nor put Cream to it; for thereby the Stimulation of the Liquor is deſtroyed, and inſtead thereof, it ſoftens and lubricates ſtill more, and generates new and greater Obſtructions and Relaxations of the Veſſels. 2. The boiling of the Milk exhales and loſes its aqueous and minute Particles, which are fitteſt for Dilution, and Attenuation; hence the groſſer, earthy, and caſeous Parts are increaſed, all which have a direct Tendency to ſtuff and load obſtructed Veſſels ſtill more. 3. The thinner Parts of the Milk being loſt, the Vehicle is unfit to inſinuate it ſelf into the Leaves, and diſſolve their delicate Salt, Oil and Earth; hence much of theſe continue wrapt up with the more mixed fix'd Parts, and are loſt.

The *Japaneſe* powder their Leaves, and pour boiling Water on them, and ſo ſip up both together: But by this Means, we are not only deprived of a clear Liquor, but the Subſtance of the Leaf, being an aſtringent, may act more forcibly on our Bodies than is conſiſtent with an equal Balance between Relaxation and Contraction. This alſo makes the *Tea* of a more rough, earthy, diſagreeable Taſte; and if Aſtringents thicken the Blood, as well as draw up the Fibres, this kind of *Tea* muſt either be exceeding weak, or its Uſe will ſoon deſtroy the neceſſary *Æquilibrium* of Nature.

After the *Chineſe*, who infuſe their *Tea* in boiling Water as we do, have pour'd the Water from the Leaves, they prepare them for an Evening Salad with Sugar, Oyl and Vinegar.

I hope the various Proceſſes, and ſundry Methods here uſed, will attone for the Length of this Diſcourſe, being not only new, but ſuch as will alſo be ſerviceable to let us into a better Acquaintance with the Properties and Sortments of other Vegetables, and that to better Purpoſe, and more Satisfaction than the pompous, forced and tedious Experiments of the Furnace: For the Truth of which, we muſt depend on the Judgment and Veracity of the Chymiſt, beſides Allowances to be made for a great many Coincidencies. And the celebrated *Boyle*, in his Obſervations *circa Noctulucam*, has juſtly obſerv'd, *Ignem non eſſe genuinam Analyſtin Concretorum, nec Chymicorum Principia eſſe talia: ſed ex aliis concreta, & ex iiſdem, alias Subſtantias diverſas poſſe produci*, &c. But theſe Experiments are eaſy, and practicable by every curious Perſon on any Plant, without Expence, much Apparatus, Loſs of Time, Danger to any Animal, or Acquaintance with the chymical Jargon of Words, more like Conjuration than Inſtruction.

I have preferr'd the Method of treating either *Tea*, or other Vegetables, by Infuſion, rather than by Fire, 1. Becauſe the laſt has been done ſo often already, that a Repetition would be only *Actum agere*. 2. Becauſe *Tea* is always us'd in Infuſion, and therefore to find out whether we have any domeſtick Vegetables of the like Nature, we muſt treat them in the ſame Manner. 3. Becauſe the Fire, 1. Changes the eſſential Salts of Vegetables into a lixivious. 2. It either changes the Texture, or affords a moſt corroſive Acid, from Things that were entirely neutral before, as to either Acid or Alcali, as Spirits of Salt, Sulphur, Nitre, *&c.* which corrode and diſſolve Metals, and inſtantly coagulate our Juices into a hard in ſeparate Maſs, and like an actual Cautery, corrode the Solids, and deſtroy them. 3. Very often the Fire, by ſeparating the vegetable Principles, ſtrips them of their Virtues; thus when *Senna* has paſs'd a chymical Analyſis, it moves not the Belly, nor will the Bark cure Intermittents, *&c.* Therefore ſuch Experiments as ſeparate the groſſer earthy Parts from the other finer Principles, without diſuniting the laſt from one another at the ſame Time, ſeem moſt natural, and promiſe us the ſureſt Account of their Effects. This is evident from the Experiments on the Infuſion of *Cocculi Indici*, &c.

But if any Perſons after all this, think them too tedious and extraneous to the Purpoſe, they may read the Diſcourſe alone, without troubling themſelves with the Notes, which contain theſe Experiments. What firſt induc'd me to attempt and purſue them, (and indeed gave Birth to this Diſſertation) was the Repetition of ſome Tryals, made by *Pechlin*, *Le Compte*, and ſome others, which I found wholly falſe, and conſequently their Reaſoning and Concluſions from them ſo too.

A
DISSERTATION
UPON THE
NATURE and PROPERTIES
OF
TEA, &c.

The oppoſite Opinions concerning *Tea*.

TEA has met with very different Treatment, according to the ſundry Humours of thoſe who have ventur'd publickly to offer their Sentiments upon it. Some aſcribe ſuch ſovereign Virtues to this Exotick, as if 'twas able to eradicate or prevent the Spring of all Diſeaſes; and extol it to a Degree that renders their Panegyrick too near a-kin to Satyr[u]. Others, on the contrary, are equally ſevere in their

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[u] Dr. *Waldſmick*, Profeſſor of Phyſick at *Marpurg*, *in Diſput. var. Argum.* 8^{vo}. calls it the Defence againſt the Enemies of Health; the univerſal *Panacea*, which has long been ſearch'd for. —— It leaves no chronical Diſtemper unpluck'd up by the Roots.

Cenſures, and impute the moſt pernicious Conſequences to it; accounting it no better than a ſlow, but efficacious Poyſon, and a Seminary of Diſeaſes [x]. And tho' its good Effects, in ſome Caſes, are ſo glaringly evident, that they cannot deny it to be ſervicable in the Gout, Arthritic Pains, Rheumatiſm, Stoppage of Urine, *&c.* yet they roundly affirm the Benefit to be owing chiefly and properly to the warm Water; or however, if 'tis of any Service in theſe Inſtances, we run the Hazard, they ſay, of an Infection with foreign and worſe Diſeaſes, which lie ſecretly lurking in the imported Leaf; and not ſatisfy'd with venting their own Prejudices, they are forward to liſt all in their Service, and make 'em vote on their Side, who give us but neceſſary Cautions againſt the exceſſive and indiſcreet Uſe of *Tea* [y]. But then to ſhew their good Nature, while they inveigh againſt, and would deprive us of this commonly pleaſing, but dangerous Exotick, they kindly provide us with domeſtick Plants of greater Service, and more general Uſe, *viz. Betony*, *Marjoram*, *Male-Speedwell*, *Eyebright*, *Juniper-berries*; and in Fevers, *Scordium*, *China-root*, *Carduus benedictus*, *Scorzonera*, *&c.* Having thus vented their Spleen againſt the Plant itſelf, they turn their virulent Pens againſt the Merchants and Importers of it, and treat 'em in a Language ſhocking to a modeſt Ear [z].

Several Prejudices anſwer'd.

Others again ſeem to queſtion the Virtues aſcrib'd to *Tea*, and imagine them induſtriouſly magnify'd to promote and encourage the Importation thereof, and increaſe the Merchants Gain [a]. But, 1. What Profit or ſelf-intereſted Views can any private Gentleman propoſe, by attempting to

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Roots. —— It is impoſſible for the Obſtructions of the *Hypochondria*, and the Diſtempers which proceed therefrom, to withſtand the Virtues of this healthful Herb; Oh admirable Virtue of *Tea!* Oh precious Treaſure of Life! *&c.*

[x] *Joh. Ludov. Hannemane*, de Potu calido, in Miſcellan. curioſ. *Mihi multis de cauſis Potus ille adeo frequens ſuſpectus eſt.* 1. *Propter nimiam copiam Aquæ.* —— *Cachexiam, vel etiam Hydropem cauſetur.* 5. *Vitium Diabetis omnino metuendum eſt in iſtis Bibacculis* Theæ. 6. *Eſt Potus magis Politicus quam Medicus.* & p. 162. 3. *Exotica noſtræ Naturæ ſunt adverſa.* 5. *Iiſque Morbi peregrini in Terram noſtram traducuntur*, &c. The two laſt Arguments equally hold good as to all imported Meats, Drinks and Medicines, to condemn which by Wholeſale would be ridiculouſly malicious.

[y] As *Daniel*, *Cruger*, *Antony de Heide*, D. D. *Chriſtian. Henric. Luſa*, *Thomas Bartholine*, *Simon Pauli*, *Jac. Wolfius*, *Bern. Swalvius*, *Henric. Maud*, &c.

[z] Charging them with inexpreſſible Frauds, calling them greedy as Hell, the vileſt of Uſurers, who lie in wait for Mens Purſes and Lives, moſt wicked Homicides, *&c.* *Hannaman*, p. 264. But, as 'tis common with others in the like Caſe, when this Author gives Liberty to his Prejudice and Paſſion, he falls into Contradictions in Argument, falſe *Latin*, and Puerility of Style.

[a] Thus *Duncan* on hot Liquors. And a certain late Author, who from a Spite he bore to one of the *Eaſt-India* Company, wrote a very ſilly, but virulent Pamphlet againſt the Uſe of *Tea*.

to put ſuch a Cheat upon the World in ſpinning out a long Panegyrick on a Plant, whoſe Uſe will not anſwer his Encomiums? All the Reward he is like to get for his Labour, is the juſt Cenſure and Reflection of the judicious Part of Mankind, who are not eaſily fooled by ſuch falſe Cries. 2. What can induce the Phyſician or Botaniſt to commend ſome common Herb, and aſcribe more Virtues to it, (though but what his own Experience juſtifies) than all preceding Authors put together have before appropriated either to it or *Tea?* Can we ſuppoſe he ridiculouſly gives himſelf this Trouble from a fond and groundleſs Admiration of *what* others ſlight and deſpiſe, or from a Principle of Philanthropy, to communicate its Virtues and Uſefulneſs to the more indigent Part of his Species? For ſure this generous Principle muſt reſide in the Breaſt of every reaſonable Being, who is a worthy Member of that Society in which Providence hath placed him. But, 3. Though all the Virtues attributed to *Tea* belong to it, and be allowed juſt, yet we may eaſily be diſappointed of its expected Efficacy: 1. When we are not proper Judges of it, and ſo have that which is damaged and adulterated put upon us, inſtead of that which is good and genuine. Or, 2. By chuſing that which is unſuitable to our Caſe and Conſtitution, as drinking *Green Tea*, which is diuretick and detergent, when we ſhou'd chuſe Lubricators and Balſamicks, & *vice verſa.* 3. By uſing a wrong Vehicle to extract its Virtues, as vinous or ſpiritous Liquors inſtead of Water [b]. Or, 4. By chuſing

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[b] Some infuſe *Tea* in Brandy or Wine, the firſt for a Stomachick, the ſecond for a Diuretick in a Cachexy or Dropſy: I put therefore a Scruple of *Bohea Tea* into a Phial-Glaſs, and pour'd two Ounces of rectified Spirit of Wine upon it, cork'd it up, and ſet it two Nights and a Day before a very warm Fire, within a broad Fender, which reflected the Heat upon it: I then pour'd off the Liquor upon a Saucer, and exhaled it; it left five Grains of a greeniſh-brown tranſparent Gum, not very Salt, but exceeding aſtringent and bitter; this put into warm Water, a Part of it diſſolved, the Remainder put into Oil, and ſet before the Fire, another Part diſſolved, and made the Liquor of a greeniſh yellow. I alſo put a Scruple of *Bohea Tea* into a Phial-Glaſs with two Ounces of Water, and let it ſtand before the Fire as long as the other, then ſtrained off the Liquor, and exhaled it. I had five Grains and a half of a dark browniſh tranſparent Gum, exceeding Salt, but leſs aſtringent, and of no delicate Taſte; it diſſolved in Water, and gave it the Tincture of ſtrong *Bohea Tea*; Copperas made it of a deep blue, almoſt black; Oyl could not diſcolour, ſoften or diſſolve it, though ſet before the Fire, nor would it flame on Iron heated red, or in the Fire, but crackled much. I put alſo a Scruple of *Bohea Tea* into two Ounces of Spirit of Wine, with four Grains of Salt of Tartar, and ſet it three Nights and two Days before the Fire; then I poured off and exhaled the Liquor, which was of a dirty dark Colour; there remained four Grains and a half of a dark brown Mucus, brackiſh, ſalt and nitrous, but neither aſtringent nor bitter, being only the Salt of Tartar diſcolour'd by a little Earth, for the dried Leaves weighed nineteen Grains and a half.

Corollary 1. Hence we ſee, that when we chuſing an unſuitable Vehicle of the ſame Kind; [c] as ſtagnant Water, or that which is impregnated with metallick Particles, or loaded with earthy, which cannot penetrate, nor diſſolve and draw out the ſeparable Principles of the Plant. 5. By drinking it to Exceſs, at unſeaſonable Times, or of an unſuitable Strength, as too weak when we ſhould aſtringe, or too ſtrong when we ſhou'd relax. 6. When by a too frequent and unneceſſary Uſe we have made it too familiar to us, ſo as 'twill not anſwer, to that Degree, thoſe Intentions we deſire. 7. When due Care is not taken in keeping the *Tea*. Or, 8. When the Water is boiled over a ſmoaky ſulphurous Fire, or boiled too much, and in an open Veſſel, or ſuch as gives it a metallick or other Taint. And laſtly, 'Tis not to be expected that any Medicine or Diet ſhould always have the ſame Effect on different Ages, Sexes, Conſtitutions, &c. It muſt be of a powerful Nature indeed to give ſudden Relief in the Heighth of a Diſtemper, or eradicate that which is become habitual by long Continuance. The over-frequent and immoderate Uſe of *Tea*, as the drinking it three or four Times a Day, and ten or twelve Diſhes at a Sitting, as 'tis the common Practice of ſome, muſt be ſo far from preventing or curing Diſeaſes, that 'tis no Wonder to ſee ſuch look pale, and complain of being low-ſpirited, the

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we would extract the ſaline Part of *Tea* chiefly, and leſs of its Oyl, Water is the proper Menſtruum or Vehicle; or if we would extract more of its ſulphureous, and leſs of its ſaline Parts, rectify'd Spirits are our Liquor; for much of the Gum, extracted by Spirits of Wine, diſſolved in Oil, and tinctur'd it, but that drawn by Water did neither. 2. A Vehicle loaded with Salts criſps up and contracts the Leaves to ſuch a Degree, that they ſcarce emit any of their Principles. The Spirit of Wine with Salt of Tartar got but half a Grain from the Leaf. 3. We ſee that *Tea* contains no Spirit, ſince its Tincture neither ſtrikes the olfactory Nerves, nor Tongue, with any volatile Parts, and that whatever Vehicle we uſe to extract its Tincture, we have the full Weight again in the Gum and dried Leaves. 4. That *Tea* contains a Reſin, or exceeding fix'd Oyl, not ſeparable from the Leaf by ſimple Element, (as will be more fully prov'd below.) 5. That *Tea* contains much light mucous Earth, ſeparable either by an aqueous or ſpirituous Menſtruum. 6. That upon the Union of this Earth and Oyl depends its Aſtringency and Bitterneſs; for the Gum, extracted by the Spirits, was exceedingly more aſtringent and bitter, than that drawn out by the Water, which had more Salt, but little Oyl.

[c] I infuſed a Dram of *Bohea Tea* in three ſundry, boiling, ſtrong, chalybeat Waters; when the laſt was poured off, and the *Tea* dried, it had loſt only one Scruple.---- The ſame Quantity, infuſed the ſame Time, in as many boiling (Pipe) Waters, loſt twenty five Grains. —— A Dram of *Green Tea*, infuſed as long in as many boiling (Pipe) Waters, loſt only twenty three Grains and a half. —— A Dram of *Bohea* infus'd in three boiling Waters, taken from a Pump, loſt twenty three Grains. ——— The ſame Quantity, infuſed as above, in clear River Water, (taken up ten Days after any Floods, or great Rains had fallen) loſt twenty ſix Grains; *Green Tea* loſt only twenty four and a half. —— A Dram of *Bohea* thus infuſed in Rain Water (gather'd in a Pewter Diſh in a Garden) loſt twenty ſix Grains and a half.

true Effects of a lax Fibre, and ſerous Blood, occaſioned by ſwilling down ſo much warm Water, and they are certainly obliged to the *Tea* that they are no worſe. But 'tis needleſs to ſpend more Time or Pains in vindicating this Liquor from the groſs Abuſes and Miſtakes of its Enemies, in which it only ſhares a common Fate with many other Things that are excellent and valuable in their own Nature.

The Reaſon of theſe different Opinions.

One great Reaſon of the different Sentiments we meet with concerning this foreign Leaf, I apprehend to be this, that tho' ſeveral Authors have wrote upon it, yet they have not made a due Enquiry into its Virtues and Properties, but rather taken them upon Truſt, than examin'd the Truth of what they affirm or deny, by a ſufficient Number of Experiments and Obſervations; which would give them ſome ſatisfactory Light into its Principles, and enable them to account rationally for its various ſurpriſing Effects.

Ten-Rhyne's ill Account of *Tea*.

William Ten-Rhyne (formerly Botaniſt and Chymiſt to the Emperor of *Japan*, and afterwards Profeſſor of Botany and Anatomy at *Batavia* in the *Eaſt-Indies)* in his *Japanick* Obſervations, ſays, *Tea* purifies the Blood, drives away frightful Dreams, diſpels malignant Vapours from the Brain, mitigates Dizzineſs, Pain of the Head, is good in Dropſies, dries up Rheums in the Eyes, corrects the Acrimony of the Humours, opens Obſtructions of the Bowels, reſtores the Sight, temperates dry Humours, cures a hot Liver, mollifies a hardened Spleen, reſtrains Sleep, makes the Body lively, and expels Drowſineſs, cheers the Heart and drives away Fear, appeaſes the Gripings and Wind in the Guts and Womb, corroborates the *Viſcera*, ſtrengthens the Memory, ſharpens the Wit, temperates the Bile, is excellent in the Stone and Gravel, and laſtly, promotes kind Correſpondence between both Sexes: But he attempts not to give any rational Account *why* we may expect ſuch extraordinary Benefits from it, or what Conſtitutions and Countries 'tis moſt agreeable to; and 'tis ſtrange he ſhould reckon it ſuch a Catholick Medicine in Dropſies, malignant Vapours, Gripes, Flatulency and relaxed *Viſcera*, ſince Experience ſeems ſo plainly to contradict him.

Pechlin's improper Subſtitutes.

Pechlin ſays, we may receive as much Benefit from ſeveral of our own Vegetables, as from *Tea*; and is very laviſh in his Praiſes of *Veronica* and *Pauls Betony*. However, he gives it a great Character, but after all ſeems at a Loſs whether to aſcribe the good Effects to the Water or the *Tea*, and is rather inclined to the former, becauſe 'tis ſo great a Diluter and Expeller of the Animal Salts; wherefore he concludes, that many of our own Vegetables are poſſeſs'd of equal Virtues with *Tea*, that is in plain *Engliſh*, none of them have any, or more Virtues than what they receive from the Water.

Rejected by *Kempher* without any Reaſon.

Kempher denies that either *Veronica*, or any other ſubſtitute domeſtick Vegetable, deſerves to come in Competition with this excellent Exotick; nor, ſays he, is there any Plant yet known in the World, whoſe Infuſion or Decoction taken ſo plentifully as that of *Tea*, ſits ſo eaſie upon the Stomach, or paſſes quicker through the Body, or ſo gently refreſhes the drooping animal Spirits, and recreates the Mind. But as true again we know no Vegetable in the World, whoſe Infuſion is drunk ſo plentifully, and therefore cannot certainly ſay what their Effects would or would not be. And though an exceſſive Quantity of *Tea* may paſs off with more Eaſe, in a leſs given Time, in warm Countries, whoſe Inhabitants are under a Neceſſity to drink proportionable to their great Perſpiration, yet this is no Precedent for the Inhabitants of a cold Climate to follow, whoſe inſenſible Evacuation is leſs, and their ſenſible greater and more conſiderable: Nor are they under the like Neceſſity to ſwill down ſuch immoderate Quantities, except their Perſpiration is diminiſh'd by a Load of viſcid Juices, thrown upon the cuticular Strainers; in this Caſe, after bleeding, I don't ſee what they can do better, than confine themſelves to a warm Room, uſe a ſpare Diet, and drink freely of ſmall *Green*, or *Sage-Tea* to dilute the Blood, that it may paſs the ſecretory Ducts of the Skin.

Cleyerus is miſtaken.

Andrew Cleyerus was poſitive that we had the *Tea*-Shrub in *Europe*, till he went to *Japan*, when he gave up his Pretenſions, and tells us quite another Story[d].

The Principles of Vegetables.

Though all Vegetables contain, or conſiſt of the ſame Principles of Air[e], Phlegm[f], Salt[g], Oil[h], and Earth[i]; yet the Modification and

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[d] *Ea quondam Opinione fui, ut impoſſibile judicaverim, Vegitabile hoc in* Europa *non inveniri; nunc tamen diverſam plane foveo Sententiam, & quod quævis Tellus ſua proferat; vidi enim in* Japania *Roſas centifolias colore elegantiſſimas, rubras, purpureas, candidas, in altis Arboribus, Menſe* Januario, *Aere adhuc frigido, enatas, Odore tamen carentes; ut & variorum Generum Lilia fruticibus lignoſis enata, nec non Pæonias flore egregie plenas, Arboreſcentes, quales in* Europa *nunquam conſpexi. ----- Arbores inſuper, ubi Ceraſos conſpexi, Flores Solis, foliorum loco etiam in* Februario, *frigore adhuc ſæviente, nullum vero Fructum ferentes.* Miſcel. curioſ. *Dec.* 2. *An.* $4^{ti.}$ p. 7.

[e] Every Plant is provided with a double Series of Veſſels, one Juice containing Tubes, and the other trachæal Canals, which contain, receive, and let out Air, which Air, when rarified, expands its containing Veſſels, whereby the other are compreſs'd: And as the Atmoſphere is rarified or compreſs'd, ſo theſe Aerial Veſſels are expanded and contracted, whereby the Circulation of the vegetable Juices are accelerated or retarded; ſo that the Dilatation or Contraction of thoſe Veſſels in Vegetables, is the ſame Thing, or act the ſame Part in them, as the *Syſtole* and *Diaſtole* of the Heart in Animals. Now as Herbs are never ſo fully dried, but a great Heat or actual Fire will diſcover ſome Phlegm in them; ſo Air, being a more elaſtick Fluid than Water, it will expand it ſelf more, and extend

Proportion thereof, (upon which their Effects on animal Bodies depend) is not only different in the various vegetable Claſſes, but each different Plant

tend the Veſſels, as the Juices exhale, till the Leaf is criſped up and dried, and then it keeps its Compaſs, and bears ſome Proportion ſtill in the Bulk of the Plant, tho' little in its Weight.

[f] Phlegm, or Water, is the common Diluter of all ſolid Bodies; and the more any Plant contains of this, the more languid are its other Principles. The Leaves of Plants abound moſt with this when they firſt put out and begin to ſpread; then they exude a clear Water, mixed with a diſſolvable acid Salt, and as Leaves neareſt the Ground are largeſt, they are filled with more Phlegm and acid Salt, becauſe they contain ſo much more earthy Parts in them. The higheſt Leaves of any aromatick Plant are the ſmalleſt, and ſmell ſtrongeſt, and the Scent is weaker all the Way to the Bottom, as the Leaf increaſes and grows larger. So when a Tree, Shrub or Plant is ſet either too deep in the Earth, or in a wet marſhy Ground, too near Water, or in a Grove where 'tis ſhaded by other Trees, which diminiſh its Perſpiration by the Leaves, it muſt have greater Plenty of crude Juices or Water, which will expand and ſtretch out the Veſſels of the Leaves to an extraordinary Degree, cauſe a greater Dilatation of the other Principles, and the ſlower Inſpiſſation of the glutinous Juices, which are the Materials of Production; and where this happens, the Fruit will be little or none at all. On the contrary, where Trees have leſs Moiſture, the other Principles are leſs diluted, lie nearer together, and are ſooner inſpiſſated into a convenient Subſtance, and their Fruit will be better and ſooner ripe. Hence dry, ſandy, gravelly Ground bears the moſt, beſt, and earlieſt Fruit; for the ſame Reaſon the Fruit on the Tops of Trees is ſooner ripe than that on the lower Branches. The Reaſon why Phlegm and acid Salts abound more in Vegetables in the Spring, than in the Summer Seaſon, is becauſe of the Weakneſs of the Sun's Heat at that Time, which, in the Summer, acts like a conſtant but ſlow burning Glaſs upon the Earth, whereby its Surface is rarified, its Salts, Oyl, and Spirits diſſolved, and aſcend the vegetable Veſſels in much greater Store.

[g] Salt has certainly the beſt Title to a Principle of all others; 'tis that which ſtrikes the Tongue with a peculiar Pungency, that gives Solidity to Bodies, and yet is diſſolvable in Water. There are three Sorts of Salts, *viz.* lixivious, volatile and eſſential; the firſt is extracted from Plants by Calcination, and is not to be found in Animals, being there changed into a Volatile from the Attrition and Action of their Veſſels and Muſcles. Volatile Salts are thoſe in ardent Spirits, drawn from Vegetables after Fermentation. The Eſſential are procur'd from the expreſs'd Juices of Plants, putrify'd, and ſet in a Cellar to cryſtallize.

[h] Oil, or Sulphur, is very ſoft and unctuous, its Parts being entangled with one another, cement and keep together the other Principles; and of this there are ſeveral Sortments, according to its more or leſs Fluidity, Tenacity and Quantity; and yet 'tis but a Compound, or particular Modification of the other Principles; for all Oils, whether fine or coarſe, volatile or fixed, are reducible to a light ſpongy Earth, Salt and Phlegm.

[i] Earth can neither be deſtroyed by Fire, nor diſſolved in Water. There are who make Spirits a fifth Principle, and indeed ſome Vegetables have Spirits; theſe are the moſt ſubtile and minute Parts of Bodies, which riſe firſt in Diſtillation, or exhale in the open Air, when eaſily ſeparable from the other Principles which embarraſs and ſhut them in. Spirits are accounted active Particles only in Reſpect of the Propenſity and Facility of their Motion, in Compariſon of the more groſs and bulky Parts being equally deſtitute

Plant of the ſame Claſs, has ſomewhat peculiar to it ſelf[k], diſtinguiſhing it from others of the ſame kind; and that not only as to its Growth and outward Appearance, but as to the Phænomena producible by ſeveral Experiments. This Variety depends on the different Rangement of thoſe Principles in different Plants. And our little Acquaintance with this particular Modification of each Herb, has made us more obliged to Chance and Empiriciſm, than to Philoſophy, for what beſt deſerve the Name of ſpecifick Medicines. But when Reaſoning is added to the fortuitous Effects of new Simples, it directs us in the Uſe and Application of them with Safety and Advantage to the Sick; and enables us to diſcover the Time and Manner of adminiſtring them in each proper Caſe, Conſtitution, Age, Seaſon and Climate. It was doubtleſs Chance, and not Reaſon, that firſt let *Paracelſus* into the pacifick Effects of the internal Uſe of *Opium*: And the miſſionary Jeſuit into the Knowledge of the Aſtringency and febrifuge Virtue of the *Peruvian* Bark. But then 'twas Reaſon, and not Chance, which taught their Succeſſors, why Opiates are dangerous, and often mortal, in an over-rarified State of the Blood, in a chronick Laxneſs of the Solids, or in Gangrenes and Mortifications, *&c.* and

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of a ſelf-moving Power with other Bodies. Spirits drawn from Vegetables, are only a fine Oil, mix'd with a ſmall Portion of Phlegm. Thoſe extracted from Animals are very minute Salts ſwimming in Phlegm. And thoſe which Foſſils afford are acid Salts fuſed by Fire, and floating in Phlegm.

[k] The Principles of all the Parts of the ſame Plant are not always alike, for Copperas turned *Tea* made of Horſe-radiſh Leaves to a deep green Colour, *Sal Martis* to a yellowiſh green, Spirit of *Sal Armoniac* to a yellowiſh Colour, like decayed Tincture of Saffron, Galls alter'd it not from clear; but *Tea* made of the Roots, was turned to a light Purple by Galls, when neither Copperas, *Sal Martis*, nor Spirit of *Sal Armoniac* could alter its Colour, or tinge it in the leaſt; but this *Tea* with Galls, turned the firſt to a beautiful Purple. Hence we ſee, that this Plant contains moſt of its volatile Salt in the Root, and the leaſt Oil there, and moſt of its Sulphur in the Leaf, where there is leaſt Salt. And 'tis common for all Roots, Trunks and Stalks to contain more Acid, and Leaves, Flowers and Seeds, on the contrary, leſs of this, and more Oil, which they emit ſooner, more freely, and with leſs Labour than the other Parts. 1. Becauſe they are more expoſed to the Rarefaction and Volatilization of the Heat of the Sun, than the Root. 2. Becauſe the watry Parts ſent up into the Leaves and Flowers, are leſs, finer, and better diſpoſed for Nutrition and Circulation. 3. The Acid in the Root fixes the other Principles, ſo as to make them of more difficult Extraction. But neither is the Root ſtored with ſo much Acid as to cauſe a viſible Fermentation with Alcali's; nor is any Herb, Leaf or Flower poſſeſs'd of ſo much Alcali, as may cauſe a manifeſt Fermentation with Acids. I have made many Experiments in order to be ſatisfy'd of the Truth of this; and find that Vegetables contain an eſſential Salt, neither ſenſibly Acid nor Alcaline by any inteſtine Motion diſcernible upon their Mixture; tho' the Taſte diſcovers an Acidity in the Buds of Plants in the Spring.

and the *Cortex* improper, when Intermittents are attended with great Dropſies, abdominal Schirrus's, or inward Impoſthumations, *&c.* But having confin'd my ſelf to ſome Tryals on the Leaf of an *Oriental* Shrub, I ſhall not expatiate upon theſe, but ſee what Diſcoveries I can gain on this Subject, and lay them down as a Specimen of what may be done on others, for the Benefit of Mankind.

No *European* Plant of the ſame Nature.

Bountiful Nature has provided us very liberally with domeſtick Vegetables, ſerviceable in a great Variety of Caſes, and left us to make a judicious Choice and Application of them to their proper and particular Intentions. Wherefore ſome eminent Authors have ſtrenuouſly argu'd, that we may reap as much Advantage from ſeveral Plants of our own Growth, as from this exotick Leaf. But the Queſtion lies not here, Whether we have not as good, nay better Specificks, (if I may be allow'd the Term for once) in many Caſes, than *Tea*; for all muſt own, that Camomile Flowers are a better Febrifuge and Carminative; the Fibres of black Hellebore Root a better Attenuator of the Blood in plethorick Conſtitutions, Penny-Royal and Hore-hound more efficacious inciding Pectorals, *&c.* But the Queſtion is, either 1. Whether we have any one domeſtick Plant, whoſe general and diatetick Uſe is equally beneficial with that of *Tea.* Or 2. Whether we have any domeſtick, or even *European* Plant, whoſe Principles are in the like Proportion, or combin'd and modify'd after the ſame Manner[l], and conſequently capable of producing the ſame Effects, which will be difficult for thoſe to prove, who ſeem forward to aſſert it[m]: And even *Veronica* it ſelf will not be found upon Tryal juſtly entitled to the high Encomiums wherein they give it the Preference to *Tea*[n].

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[l] To ſatisfy my ſelf herein, I made Tryal of ſome out of all the chief medicinal Claſſes of Vegetables; as out of the Cardiacks and Cephalicks, I took Betony, Sage, Thyme, Lavender Flowers and Marjoram: Of the Diaphoretick's; Baum, Scordium and Saffron: Of the Vulneraries; Agrimony, St. *John*'s Wort, Horehound, Ground-Ivy, and Roots of *Solomon*'s Seal: Of Carminatives; Camomile Flowers, and Angelica Roots: Of Emmenagogues and Hyſtericks; Savine and Mother-wort: Of Aſtringents; Galls, red Roſes, Tormentil Roots, Oak Leaves, and Pomgranate Peel: Of Stomachick's, *Carduus benedictus*, leſſer Centaury, and Gentian: Of Balſamick's; Mallow, Roots of *Althea* and *Aaron:* Of Reſtoratives or Pectorals; Colts-foot, Maiden-hair, and Hinds-tongue: Of Detergents; *Veronica*, Savory, Vervain and Pimpernel: Of Diureticks, Horſe-radiſh and Salary Roots: Of Coolers, Dandelion and Bugloſs: Of Abſorbients, Saſſafras: Of Narcoticks, *Cocculi Indici:* (becauſe being Winter Seaſon, I could have no Hemlock, *Solanum*, or Poppy Leaves.) But after Experiments made on all theſe, I found none of them bear any near Reſemblance to *Tea*, either in Taſte or Colour; thoſe of the vulnerary and aſtringent Tribes ſeem'd to offer faireſt for it, yet they all widely differ'd in their *Phænomena* from it.

[m] Though Copperas turns the Infuſion of Agrimony into a pale Blue, and that of Oak-Leaves into a very light Sky Blue, as far exceeding that of *Tea* as the other falls ſhort of it; yet the one is much leſs Aſtringent,

Tea,

Aſtringent, and both vaſtly inferior to *Tea* for a fine delicate Flavour and Taſte. The Infuſion of Bramble Leaves ſeem'd to promiſe ſomething more than either of theſe; but inſtead of a bitter aſtringent Taſte, had ſomething like that of Liquorice and Ground-Ivy.

[n] *Pechlin* is very profuſe in his Commendations of *Veronica:* He ſays, “It gives a good tolerable Tincture; and though the Taſte be not bitter, yet it's extreamly Aſtringent; and not only ſo, but it turns black like *Tea* when mix'd with a Solution of Vitriol, or Copperas; neither does it come far ſhort of it in its Effects, ſince it cleanſes the Reins, and very much ſtrengthens the Head and Stomach. It abounds with a briſk volatile Salt, which is very agreeable to our Northern Conſtitutions, whoſe Blood is naturally ſluggiſh and heavy; and it alſo carries with it a fine thin Oil, ſo admirably well tempered, that as this hinders the Spirits from evaporating, ſo theſe correct the Inflammability of this, from whence reſults a very agreeable bitter Aſtringent.” He has here forgot himſelf, having told us but a little before, 'twas aſtringent, but not bitter. “All theſe together, as he goes on, as they rectify the Ferment of the Blood, and at the ſame Time ſtrengthen and confirm the Tone of the Parts, contribute ſo much to the Aſſiſtance of Nature in its Operations, as to prevent, if not cure, moſt chronical Diſtempers.” ——— I tried ſeveral Times the Infuſions of *Tea* and *Veronica* with Copperas, but could never find his Experiments hold good, except they were made by Candle-light, and then indeed they appeared pretty near the ſame. I took *Bohea*, *Green Tea*, and dried *Veronica* Leaves, of each a Scruple, put them ſeparately into three *Tea* Pots, and pour'd a Cup-full of boiling Water upon each of them: When they had ſtood ſeven or eight Minutes, I pour'd off the Liquor into three different *Tea* Cups, upon a Grain of Copperas, or green Vitriol: The *Bohea Tea* was firſt of a deep blue, but preſently follow'd a Precipitation of much black *Mucus*, above which ſtood a clear Liquor: The *Green Tea* was of a much lighter blue, its Precipitation was neither ſo ſudden, nor great, being of a bluiſh black Colour, the Liquor above was ſtill of a blue Tincture. The *Veronica Tea* was of a diſagreeable dark *Green*. And trying them again in three other Cups, Spirit of Hartſhorn turned *Bohea Tea* to a deep reddiſh brown, like freſh drawn Tincture of Saffron; *Green Tea* to a deep greeniſh yellow, and changed *Veronica Tea* to a yellowiſh brown, like decayed Tincture of Saffron: The Clouds, raiſed in the *Green* and *Bohea Tea* by this Spirit, were ſurprizingly beautiful: After they had ſtood four or five Hours, Galls turned the *Bohea* of a reddiſh green, and made the *Green Tea* clear, having a Powder of a whitiſh Colour at the Bottom; and the *Veronica Tea* was changed to a clear browniſh Colour. When the *Bohea Tea*, with Spirit of Hartſhorn and Copperas were mix'd together, it precipitated much grey Powder, with a clear Liquor at Top, ſomewhat of the ſame Die, having a beautiful variegated thin Pellicle on its Surface: The *Green Tea*, with Copperas and Spirit of Hartſhorn, was of a purple Colour precipitated, much cover'd with a ſtronger and more beautiful Pellicle than the former; *Veronica Tea* thus mix'd, let fall a greeniſh Powder, the Liquor was ſomewhat of a dark brown, and had a very ſmall Pellicle. ---- Spirit of *Sal Armoniac* put to theſe *Teas*, wherein was the powder'd Gall, made *Bohea* of a deep yellowiſh brown, *Green Tea* of a light yellowiſh brown, and *Veronica* of a greeniſh yellow. ---- *Bohea Tea*, with Galls and Copperas, was of a whitiſh blue, *Green Tea* very much the ſame, and *Veronica*

ronica Tea of a blackiſh green. ---- *Bohea*, with Galls, Copperas, and Spirit of *Sal Armoniac*, was of a reddiſh black Colour; *Green Tea* the ſame, and *Veronica* of a greeniſh black, and all very thick; but any of the acid Spirits clear'd them all again.

N. B. A Grain of Copperas, half a Grain of Galls, twelve Drops of the alkaline Spirits were ſufficient for each of theſe Experiments, which were made in very clear Weather in *November*; I uſed only Pipe Water, and the *Tea* Cups were clean waſh'd after every Experiment. 2. The Clouds in the *Green* and *Bohea Tea*, after they had ſtood ſome Hours with Spirit of Hartſhorn, were Semicircular, with their Convex Sides towards the Circumference of the Cup, and their Concave facing the Centre, one incloſed within another. I once obſerv'd that inſtead of Semicircles, in *Green Tea*, there were ſtraight Lines from the Sides of the Cup, as from the Circumference of a Circle to its Centre. 3. When Betony *Tea* had ſtood about two Hours, after the Spirits were dropt into it, and ſtirred about with a Fork (which had been us'd before in ſtirring *Tea* with Copperas in it) the Stalks of Betony, at its full Growth, without Leaves or Flowers, ſtood out from one Side of the Cup, as from the Root, and reached to the other; Baum and Winter Savory *Tea* did the ſame, when the Spirits were dropp'd into them, and ſtirr'd with a Fork taken immediately out of the Solution of Copperas in the ſame Infuſions: But I tried theſe ſeveral Times after, and could never meet with this *Phænomenon* again. 4. When *Green Tea* with Spirit of Hartſhorn and Copperas, had ſtood over Night, I found a fine Pellicle of red, blue, and yellow Colours at Top, which I ſcum'd off, but could neither make it incorporate with Water, nor its own Liquor again, being chiefly Oil, ſtripp'd of its Salts, and diſentangled from its earthy Particles, by the Water. Fine Salt of *Tea*, (procur'd by Calcination, Filtration, or Exhalation by a gentle Heat) when view'd through a Microſcope, in a ſtraight Line from the Eye to the Sun, appeared of the ſame beautiful variegated Colours, as the Pellicle on the Surface of the Liquor: But view'd in any other Light, was clear and tranſparent as Cryſtal, conſiſting of very ſmall Particles, and theſe not much pointed. --- But finding, that in all my Experiments on about ſeventy Vegetables, the Colours produced by Copperas, Galls, Spirit of Hartſhorn, Sal Volatile, Spirit of Sal Armoniack, Sal Martis, Spirit of Vitriol, &c. were ſtill different; and upon a Repetition of them on the ſame Vegetables, they were the ſame again, I thought it neceſſary in the next Place, to enquire into the Reaſon of it. And ſhall now Preſent my Readers with a few ſuch Tryals as are proper to illuſtrate our preſent Subject *Tea*.

I took four *Tea* Cups, and pour'd two ſpoonfuls of warm Water into each of them; in the firſt I put three Grains of Copperas, upon which it ſeem'd to ſend out ſeveral greeniſh Rays, but when the Vitriol was quite diſſolved, the Liquor was the ſame in all Reſpects as before: Into the ſecond Cup I put a Grain of powder'd Gall, which fell to the Bottom, and alter'd not the Colour of the Water in the leaſt: Into the third, I put twenty Drops of Spirit of Hartſhorn, but neither did this diſcolour the Water: Into the fourth, four Grains of Salt of Tartar, which made the Water ſomewhat whitiſh, but it continued clear. ---- Theſe Waters, with Copperas and Gall, being mix'd, they immediately became black, and precipitated much Sediment. Sal Volatile dropp'd into the Water with Copperas, cauſed inſtantly a curled Sediment to ſubſide; the Mixture was of a deep green Colour, and had a delicate Pellicle on its Surface. Spirit of Hartſhorn, or Salt of Tartar, quickly made it Green again, and cauſed a fermenting Heat.

Corollary 1. Seeing neither Acids nor Alkali's, fix'd or volatile, affected or changed the Water, therefore ſimple Element partakes ſo little of either ſort of Salts or Foſſils, that they are inſenſible and inviſible, and conſequently 'tis an admirable Diluter of any Acrimony which may abound in the animal Body, ſince it defies to aſſociate with theſe. *Cor.* 2. From Copperas and Galls turning the Water black, we learn that Copperas contains much acid Salt, wrapp'd up in a ferruginous Earth, for Galls do the ſame with chalybeat Waters: And that Galls contain much alkaline Matter, ſeeing their Mixture with Copperas occaſions a Precipitation in the Liquor. *Cor.* 3. From acid Spirits taking up the Precipitation, we ſee, 1. The attractive Force of Acids, whereby they incloſe the Particles of Bodies on all ſides; eſpecially of Metals, raiſe and ſeparate them from one another, till they diſſolve them into ſuch minute Particles as are inviſible, *i. e.* they render the Liquor tranſparent, and free from Precipitation. 2. From this we ſee, that Acids conſiſt of ſmall ſolid Particles, leſs than thoſe of Earth, but very ſharp and piercing. 3. That Alkalines are Corpuſcles larger than the former, globular and very porous, and are chiefly conſtituted of Earth, united with ſome acid Particles. 4. Since theſe Salts conſiſt of a very different Figure and Size, and we have yet no other Terms of expreſſing this Difference, then to condemn theſe, when their meaning is fix'd, and univerſally known (tho' they convey no definite Idea of the thing expreſs'd) is to quarrel merely for the ſake of Words.

All Salts, whether Vegetable, Animal or Foſſil, differ in no other Reſpects but theſe, of their Bulk, Figure, Compoſition, and different Degrees of Attraction, ſome being ſo ſmall as to become Volatile; others more coarſe and groſs; ſome globular and ſmooth, others ſharp and poignant; whereby they either ſtimulate the Fibres, or corrode and diſſolve them: Some of the Vegetable Salts are ſtrongly attach'd to the Earth of the Plant; others are hid in its Oil and Sulphur, and ſome watry Plants have their Salts cover'd with an earthy Mucus, which prevents their ſenſible Effects upon our Bodies. *Cor.* 4. The Cauſe of the Fermentation, Heat, Foaming and Smoaking of the *Tea* or Water, with Salt of Tartar and acid Spirits, is the Particles of the Acid furiouſly ruſhing upon the Particles of the lixivious Salts, which excites ſuch an inteſtine Motion in the Liquor, as raiſes a ſenſible Heat: At the ſame time it ſtrikes with ſuch Force againſt the coarſer Particles, that returning the Colliſion, they are broken in Pieces, and either turn to Air, or ſend forth their impriſon'd Particles of Air, which being ſpecifically lighter than Water, riſe up in Bubbles to its Surface.

I boiled half an Ounce of powder'd roll Brimſtone in a Pint of Water to three Quarters of a Pint, and took two Spoonfuls of this Liquor after it was ſettled, but ſomething warm, to which I put a Grain of Copperas; 'twas ſoon diſſolved, but the Water continued clear: To other two Spoonfuls of this Liquor, I put a Grain of powder'd Gall, which preſently chang'd it to a weak Purple Colour. Theſe two mix'd together, made a charming light Blue, but preſently a Precipitation follow'd, and left a tranſparent bluiſh Liquor at Top: Spirit of Hartſhorn alter'd not the Colour at all, but Copperas thrown into it, after this, turned it of a light Green, with a whitiſh Blue Caſt in the middle of its Surface, and let fall a Precipitation: Spirit of Hartſhorn, dropped into the Cup wherein was the Gall, turned the Liquor of a reddiſh Brown, without any Precipitation: A little Copperas put to them, made the whole of a browniſh Black, and had a ſtrong Pellicle on its Surface; it cauſed a Precipitation much larger than the Quantity of all the three Ingredients put into the Liquor. From this Paragraph we learn,

Corollary 1. Seeing Copperas alter'd not the Colour of the Decoction of Brimſtone, therefore this Sulphur, beſides its Oil, contains more of an acid Salt than Earth, ſo as the Acid of the Vitriol and Sulphur, not having an Alkaline to act upon the Water, ſtill continu'd tranſparent. *Cor.* 2. Where the Alcali, or light porous neutral Earth in a Mixture, is ſuperior to a real and ſenſible Acid, there a Precipitation follows, but, *vice verſa*, when the Acid is manifeſtly greater than the Alcali, the Strength of the former clears and diſſolves the latter: Thus *Tea* with

Galls, mix'd with a Solution of Copperas, produced a Sediment, but the acid Spirits quickly diſſipated and diſſolved it.

I made a thick Liniment of Salt of Tartar, and Oil of Olive, and took a Scruple of this, one Grain of Galls, and three Grains of Copperas, upon which I pour'd a *Tea* cup full of boiling Water: This Mixture was firſt of a reddiſh Brown, then of a deep blackiſh Blue, with a dirty foaming brown Pellicle on its Surface, and a large Sediment. ---- Then I put two Grains of Copperas to ſix Grains of the Liniment, and pour'd two Spoonfuls of boiling Water on them, which turned of a light blue Colour, threw up a groſs Pellicle, and let fall a Sediment as in *Tea*. --- I mix'd one Grain of powder'd Gall, with four Grains of the Liniment, and pour'd boiling Water on them: The Mixture was firſt brown, and then greeniſh. --- I put the clear Liquor of this to the clear Liquor upon the Copperas, which produced a deep reddiſh Colour. It was the ſame in all Reſpects, when I us'd *Green Tea* inſtead of Water; for a little of the Liniment put into *Tea*, made it thick and whitiſh, ſo it did Water: Copperas caus'd it to precipitate in *Tea*, and ſo it did in Water; it was firſt reddiſh, but quickly turn'd to a light or whitiſh Blue, with a thick white Pellicle at top: Water did the like; ſo that uſing *Green Tea*, inſtead of Water, was only adding ſo much more Oil and Salt: Salt of Tartar alone produced the ſame *Phænomena* as the Liniment. Now as Salt of Tartar, whether it be made by calcining it in a Crucible, or wrapping it in a Paper, and burning it in an open Fire, after all Purification liquifies again, and turns to Oil, if the Air has free Acceſs to it. This Corollary ariſes hence, That Oils, whether fine or coarſe, fixed or volatile, conſiſt of, and are reducible to, a ſpongy Earth, Salt and Phlegm; ſo that Oil cannot, with any tolerable Propriety or Strictneſs, be call'd a Principle, but a ſpecial Modification or Compoſition of the former.

But in order to be ſatisfy'd on what Principle or Principles theſe *Phænomena* of *Tea* depend; I took two Drams of *Green Tea*, and pour'd ſeveral times boiling Pipe Water upon it, till the Liquor was not only clear and inſipid, but till Copperas would give it no Tincture; then I burnt the Leaves to white Aſhes, and threw them into the *Tea*, boiled it on a ſlow Fire till the whole Humidity was evaporated; but when the Water was almoſt ſpent, there roſe up a very thick blue Smoak, which was the Oil: A little of this Extract, mix'd with a Solution of Copperas in Water, made the Liquor exceeding blue. The Smoak being gone, and nothing but dry *Fæces* remaining, (which were the Earth and Salt) I took them from the Fire, pour'd Water on them, and ſtirr'd them well about, and then put three Grains of Copperas into a little of this Liquor, but no Change or Alteration of Colour follow'd upon it; ſo that theſe *Phænomena* depended not on a Mixture of the Salt and Earth; then I filtred the reſt of the Liquor, and put a little Powder of Gall into one Part, and ſome Copperas into another; but theſe alter'd not the Colour; this Variety therefore depends not on the Salt. Then I took ſome of the Earth mixed in Water, and added Copperas to it, but no Change follow'd, ſo that the Earth was no principal Agent in theſe *Phænomena*. Hence 'tis plain they depended on the Oil or Sulphur, and therefore this being ſeparated from the reſt, no Variety of Colours were to be expected. --- This is further demonſtrable from Copperas and Galls, turning the Water with the forementioned Liniment of a light Blue. By this Courſe we are not only taught the Principle which occaſions theſe pleaſing Changes of Colour, but its Texture alſo; for both Sulphur and Sal Volatile, contain a moſt ſubtile Oil, in great Plenty; and the Reaſon why 'tis volatile in them, and not in *Tea*, though it bears a near Reſemblance to them, is, becauſe that of *Tea* is more firmly attached and cemented to the earthy Particles, as we ſhall ſee from other Experiments in the next Section.

I could likewiſe give the Reaſons why

The Principles of *Tea*.

Tea, as imported to us, contains ſome little Phlegm, (but more volatile Salts) which it had either retained in the roaſting, or imbibed from the Air afterwards. All kinds of *Bohea* have naturally more of this than the *Green*, becauſe 'tis pluck'd while this Principle exceeds its due Proportion, *viz.* before the Salt, Oil and Earth have been ſufficiently diſſolv'd and rarified by the ſubterranean and aerial Heat, and prepared to riſe up into the Plant, in due Quantity with the Phlegm. As the Leaf grows, its watry Principles leſſen, and its oily ones increaſe; for the firſt Juice, this Plant draws in plentifully from the Earth, is a groſs, acid, ſaline Matter, of which *Bohea Tea* exudes more in roaſting than *Green*. The Reaſon why the Oil increaſes is this, the tracheal Veſſels being expanded by the rarified Air, compreſs the Juice conveying Tubes, and as theſe are driven into ſmaller Diameters, and are more agitated, they either expel their finer watry Juices thro' their perſpiratory Ducts of the Leaves, or return them to the Earth, but the more coheſive or entangled Parts, becoming thicker, are ſtrained off, and propelled into ſmall lateral Bags, appointed to receive the oily Part of the Plant. But if the Herb contain Salt or Oil, of more ſubtile, minute, or ſeparable Parts, than the Water; or if they are more attracted by the Water than by one another, and the Pores as favourable for the Filtration of them, then they go off together with the Phlegm. For this Reaſon the aromatick Plants yield the moſt odoriferous Smell in a dry hot Seaſon, after a warm Shower, which relaxes their parched Fibres.

This Oil of *Tea* is of ſundry Sortments, one Part of it being ſo looſe that it exhales, if either the Leaf be expoſed to the open Air, or put up in Paper, or any ſpongy Veſſel [o]; for which Reaſon 'tis ſent to us in Tin Caniſters. Another Part is drawn off by Infuſion in cold Water [p]. A third

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Copperas, Galls, Sal Martis, *&c.* make the Infuſion of one Vegetable blue, of another yellow, of a third green, of a fourth black, *&c.* which is more, and gives a truer Account of the Proportions and Modifications of Principles in Plants, than Chymiſtry has yet done, as far as I know: But this would protract the preſent Diſcourſe vaſtly beyond its intended Brevity.

[o] I weigh'd a Dram of *Green*, and a Dram of *Bohea Tea*, ſpread each upon a Saucer, which I ſet before a ſmall Fire within the Fender a quarter of an Hour; tho' both had the ſame Degree of Heat; yet when I weigh'd them again, the firſt had loſt two Grains, *i. e.* one thirtieth part, the laſt had evaporated ſix Grains, *i. e.* one tenth part of the Weight.

[p] I infuſed two Drams of *Green Tea* 24 Hours in a Pint of Pipe Water cold, then pour'd off the Water, and dried the *Tea*, and then weighing it, found it had loſt 32 Grains; during that Infuſion, the dried Leaf was ſomething blacker than before, but recover'd its former Curl. ---- Two Drams of *Imperial Tea*, infuſed 24 Hours in a Pint of cold Pipe Water, when the Leaf was dried again, had loſt 30 Grains, *i. e.* one fourth part. --- The ſame Quantity of *Bohea* thus infuſed, loſt 31 Grains.

A third Part is extracted by boiling Water[q]. A fourth is not to be moved by Infuſion; but requires a ſtrong Decoction to fetch it out[r]. A fifth ſort is not to be drawn off by an aqueous Vehicle, but muſt have rectified Spirits to extract it[s]: And the laſt Part is only ſeparable by an open Fire[t], ſo that the Oil of *Tea* is a ſemi-balſamick Liquor, conſiſting of Mucus, or light ſmall ſeparable Earth and Oil, which conſtitutes a Gum[u], partly diſſolved in Water[x], and partly inflammable with the Fire[y]. The whole is very thick, black, ſtrong and aſtringent. Hence then,

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[q] Two Drams of *Imperial Tea*, infuſed two Hours and a half in three ſundry boiling Waters after it was dried, had loſt thirty four Grains: When this *Imperial Tea*, and that which had been infuſed in cold Water, had lain two Days after they were dried, the firſt was ten Grains lighter than the latter, its Leaves were alſo black, and had loſt their Curl, which they never recover'd, but the other ſcarce loſt either Curl or Colour. --- I pour'd a Pint of boiling Water on that *Green Tea*, which was infuſed in cold Water before, and dried again, and let it ſtand an Hour; the Liquor when pour'd off, was little ſhort either of its Aſtringency or Tincture, but deſtitute of its fine Flavour: The Leaf dried again and weighed, had loſt ſixteen Grains more, that is, forty eight in all. --- Two Drams of *Green Tea* infuſed in four ſeveral boiling Waters, each of which ſtood on half an Hour, the laſt when pour'd off was clear, and had little Taſte; then I dried the Leaf before the Fire, and found it had loſt forty ſix Grains. -- Two Drams of *Bohea*, infuſed as the laſt in all Reſpects, and dried, had loſt forty eight Grains. --- One hundred and twelve Grains of *Hyſſon Tea* infuſed three quarters of an Hour in boiling Water, loſt forty two Grains, which is above a third part. --- Of thoſe *Teas* that had been thus infuſed, I took five Scruples and twelve Grains, pour'd a Pint of boiling Water on them, and let them ſtand twenty four Hours, then chang'd the Water, and let it ſtand on as long a ſecond Time, and repeated it twice more; Copperas ſtill tinctur'd the Liquor of a light blue, till it came firſt to a weak purple, and then clear; I took out the Leaves and dried them, and found they had loſt only nine Grains, for one hundred and three remain'd.

[r] I took the laſt hundred and three Grains, and boiled them in a Pint and a half of Water to half a Pint, which ſtrained off, taſted more aſtringent than the third Infuſion of *Tea* ordinarily does, but not bitter, nor had it any fine Flavour: Copperas made it of a beautiful blue, but it neither depoſited ſo much Sediment, nor was the Liquor at Top ſo clear as in the firſt Infuſion: I gave it ſix Decoctions more; the fourth was blue with a purple Caſt, the fifth more inclined to a purple, the ſeventh was perfectly clear; in all theſe Decoctions the Sediment ſtill decreaſed with the Colour, but more of this preſently.

[s] After I had firſt infuſed *Pekoe Tea*, and boiled it as above, and dried it, I put twenty two Grains into an Ounce and a half of rectified Spirit of Wine in a Phial Glaſs, and ſet it before a hot Fire ten Hours: It tinctur'd the Spirit of a deep green; the Liquor being pour'd off, and the *Tea* dried, it had loſt two Grains and a half. --- I took alſo one Dram and twelve Grains of *Bohea*, (that had been infuſed in ſix or ſeven boiling Waters ſixteen Hours, and boiled in as many more the next Day, and then dried) which I put into a Phial Glaſs with two Ounces and a half of rectified Spirits, ſetting it three Days before the Fire: The Spirits were tinctur'd of a deep beautiful green, tho' they appeared black thro' the Glaſs: Theſe pour'd off, I put on freſh Spirits, which in two Days were tinctured of a light green, and the Leaves were ſo criſp'd as to powder in the Hand: When they were thorougly dried, they had loſt ſeven Grains and a half: I exhaled the Spirit, and had ſeven Grains of Gum. On this Gum I poured freſh Spirits, and ſet it on fire till the Spirits were burnt, expecting the Flame would conſume the Oil together

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ther with the Spirits; but it left the Gum entire and very moiſt, and before the Fire it diſſolved more.

[t] I put two Drams of *Tea*, (after it had been infuſed and boil'd in Water, and had its Reſin extracted by Spirits of Wine) into a Crucible, ſet it in a good clear Fire, and cover'd it with an Iron Plate fitted to it; but the Rarefaction of the heated Air obliged me preſently to take this off, to ſave the Crucible from burſting to pieces. The *Tea* firſt ſent up a very thick blue Smoak, and then taking fire, gave a great clear Flame; a deal of black tough Oil hung upon the lower Side of the Plate, which taſted exceeding rough and bitter. I tried the ſame on other *Tea*, and found the ſame Effects.

[u] I took four Scruples of *Hyſſon Tea*, which I divided into two equal Parts, and put into two Phials, then pouring two Ounces of Spirits of Wine on each, I ſet the one before a warm Fire five Days, (*N. B.* In all theſe Experiments before the Fire, the Glaſſes were ſet at a Foot and a half Diſtance from the Bars of a ſmall Stove, within a broad Fender, which overtopp'd the Phials, and reflected the Heat upon them,) and then removed it into a Window in the ſame Room, where it ſtood ſeven Days more. The other Phial I ſet in a cold Room, which had no Fire in it, and let it ſtand thirteen or fourteen Days. I did the like with four Scruples of *Green Tea*, and four Scruples of *Pekoe:* After theſe three, which were ſet before the Fire, had ſtood ſix Hours, the Spirits were of a moſt beautiful green Colour; the *Pekoe* afterwards turn'd very dark, the *Hyſſon* ſcarce tranſparent, the *Green Tea* very brown, but ſtill tranſparent. At the End of the Time above ſpecified, when the Spirits were pour'd out upon three Saucers, they were all of a deep dark green, and very thick; the *Hyſſon* Leaves when dried, were of a whitiſh green Colour, and had loſt thirteen Grains, *i. e.* near a third part; the *Pekoe* had loſt twelve Grains, the *Green* thirteen Grains and a quarter, exactly one third. The Spirits wherein the *Hyſſon* had been infuſed, when exhaled, left thirteen Grains of a greeniſh brown, and tranſparent beautiful Gum; the *Pekoe* left eleven Grains and a half of Gum like *Lacca: Green Tea* afforded thirteen Grains of a green coloured Gum. Of thoſe which had ſtood thirteen or fourteen Days in the cold Infuſion, *Green Tea* loſt ſeven Grains, and had ſeven Grains of Gum; *Hyſſon* left ſeven Grains of a very bitter, aſtringent and delicate taſted green Gum; *Pekoe* loſt ſix Grains, and had ſix Grains of a browniſh black Gum. The Tinctures drawn in the cold, were much more beautiful than thoſe drawn in the Heat, and had a finer Flavour; the dried Leaves were of a clear ſparkling Colour, as tho' cover'd with ſome Reſin: Theſe ſoon expanded when put into boiling Water, but the other Leaves which had ſtood in the hot Infuſion were ſo criſped, that they expanded not before they had been two or three Hours in Water: This *Hyſſon Tea* infuſed in ſeveral boiling Waters, till Copperas would tincture the Liquor no longer, when taken out and dried, weighed only nineteen Grains: The *Pekoe Tea* weighed eighteen Grains and a half; the *Green Tea* nineteen Grains.

[x] I put a little of the Gum, extracted by the Spirits, into cold Water, and ſetting it before the Fire, a great Part of it inſtantly diſſolved and tinctur'd the Water green, making it exceeding bitter and aſtringent.

[y] I laid ſix Grains of the Gum on a Fire-Shovel, heated red; it all quickly flow'd, burnt away in a crackling Flame, and left only a few white Aſhes.

then, this Leaf affords us, 1. A thin Oil, which is diſſipated either by lying long in the open Air, or by Infuſion in cold Water. 2. A ſemi-balſamick Liquor ſomewhat groſſer than the former, 3. A thick and black ſubreſinous Oil. 4. A little Reſin, friable in the cold, and inflammable by Fire, but not diſſolvable by Water. 5. A Gum conſiſting of more Mucus than Oil[z], and therefore either diſſolvable in Water, or combuſtible in the Fire. This is the true Texture of the Oil this Leaf affords; as for that of its Flowers and Seeds, I have had no Opportunity of examining it, nor are theſe ſuch Parts of the Plant, as are uſed ſeparately, either here or in *India*.

Tea contains a Salt too, but 'tis chiefly fixed, when 'tis brought to us[a]. It has alſo a ſolid Earth, which neither Water can diſſolve, nor Fire deſtroy[b]. And as moſt other Vegetables have their proper Juices, ſo the *Tea* Leaf, when green, has its own peculiar Humour, which is neither aerial, pinguedinous, nor reſinous: Thus Celandine has a yellow, Aloes a golden colour'd, Sow-thiſtle and Spurge a white milky Juice, and that of *Tea* is yellow; but as this evaporates in roaſting, its ſenſible narcotick Quality is loſt. This Juice ſeems therefore ro contain much ſubtile and volatile Salts of a very fuſive Nature[c].

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[z] All young Sprigs, or Shoots of Trees have their Bark well ſtor'd with this kind of Matter, which fences them againſt the Winter cold, and likewiſe the Leaves of Ever-greens, whereby they are preſerved during Storms and Froſts. Hence we are convinced from this Analyſis, that *Tea* Leaves muſt continue green through the Winter Seaſon. Ever-greens abound more with Oil than other Plants, becauſe their excretory Ducts are narrower, or have ſmaller Diameters, whereby they perſpire leſs in the ſame given Time than others, and what they do ſend off conſiſts of finer and ſmaller Particles; for Oil not being capable of the ſame Degree of Motion, from an equal pulſive Cauſe, as Water, nor conſiſting of ſuch ſubtile Parts, therefore leſs of this goes off, in Proportion, than of the latter; and where theſe Circumſtances meet in a Shrub or Leaf, well ſtor'd with Oil, ſuch will bid Defiance to the Winters cold. But upon the Summer's Return, when Nature appears in her greateſt Beauty and Glory, and the Heat diſſolves, and raiſes the Salt, Oil and Phlegm afreſh from the Earth, then are theſe old remaining Principles in the laſt Years Leaf, either loſt, or ſo indiſſolvably fix'd and cemented, and the containing Veſſels become ſo rigid, indilatable and incapable of new Attrition and further Growth, that the old Leaves muſt fall off, and give way to new ones.

[a] [b] I took two Drams of *Tea*, and drew off all that Infuſion or Decoction cou'd extract, then dried and burnt the Leaves, put the Aſhes into the Liquor again, and evaporated it over a ſlow Fire to Dryneſs. I pour'd Water on the Reſiduum, and filter'd it twice, then dried the Earth well, which weighed thirty ſix Grains. I then evaporated the filtrated Liquor ſlowly, and there remained eight Grains of an exceeding brackiſh brown Salt, which would neither ferment with acid Spirits, nor Lemon Juice: A Proof that fixed Chymical Salts, which ferment with theſe, are not the true Product of the Vegetable, thus chymically analized, but the Effects of the Fire.

The different Proportions of theſe Principles.

The Proportion of theſe Principles to one another, appears, by the moſt careful Experiments I could make, to be as follows: *Bohea Tea* contains one tenth of Phlegm and volatile Salt; this conſtitutes only a thirtieth Part of *Green*[d]. The fix'd Earth, which is neither to be carried off by Decoction nor Incineration, conſtitutes about a third part of both, only *Green Tea* has a thirty firſt Part more Earth than *Bohea*[e]; and

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[c] To know the Effects of Narcoticks on our Fluids, I took two Drams of *Cocculi Indici* groſly powder'd, put them into a Tea Pot, and pour'd above half a Pint of boiling Water on them, which ſtood ſix Hours; and then putting three Tea ſpoonfuls of this Liquor into three Ounces of Blood, it turn'd it to a beautiful Crimſon red, and diſſolved four Times more than either the fixed or volatile alkaline Salts. Next Day I ſet it before a very hot Fire, till about half a Spoonful of it was evaporated, but there appear'd not the leaſt Tendency to a Coagulation in it: Into the Remainder I put fourteen Drops of Spirit of Salt, and let it ſtand three Hours; then viewing it again, I found 'twas coagulated as far as the Spirit had reach'd, or rather conſolidated into ſo many hard Knots; but the Blood in the Interſtices was ſtill thin, tho' blacker: I broke two or three of theſe Knots, which were black without, but of a whitiſh brown within, and ſpongy as a Muſhroom: Yet the Blood was not rarified *de novo*, nor took it up any more Space on the Saucer, than before the Spirits were dropt into it.

Corollary 1. From this Experiment we learn, why Narcoticks are ſo dangerous and deſtructive when given to Exceſs; The Multitude of their volatile Salts deſtroys the Texture of the Blood; fuſes, and makes it take up much more Room in the Veſſels, while at the ſame Time theſe Tubes, which ſhould give a Check and Reſiſtance to Rarefaction, are relaxed, and laid by reſty and uſeleſs, through the large Quantity of Oil, as well as Salts, which they contain; for this *Tea* had much Oil ſwimming at Top. 2. From hence we know the Reaſon why Ale, that has *Coeculi Indici* in it, is clearer and ſtronger in proportion, and will keep longer; and why after five or ſix Months, it may be drunk pretty ſafely, *viz.* during Fermentation, and after its barrel'd up, theſe ſolid, minute, penetrative Particles of Salts, enter the Coheſions of the Liquor, diſtend and break them; and becauſe they are exceeding light, they maintain their reſpective Poſitions of Gravity, and as they break the other groſs Coheſions, the laſt fall to the Bottom, and leave the Liquor very clear; but this Attenuation, or Diviſion of theſe ſundry larger Combinations, cauſes them to emit their whole Spirits into the Ale, whereby it becomes ſtronger; but theſe narcotick Particles being of the ſmalleſt and lighteſt Sortments, they either exhale, or are imbibed by the Caſk, till they are wholly ſpent, and ſo leave the Liquor clearer and ſtronger, and not prejudicial to the Drinker. 3. From this Experiment we ſee how deceitful it is to truſt the Cure of over dozed Opiates to Bleeding, and the cold Bath, for the firſt cannot give a briſk, continued *Stimulus* to the whole nervous Syſtem, nor the latter take off the Blood's Rarifaction, or its Cauſe. 4. We hence ſee the Reaſon why an unneceſſary and frequent Uſe of volatile Spirits in *Tea*, muſt make the Drinker pale, feeble, faint and vapour'd; they rarify the Blood in the ſame Manner, tho' not to the ſame Degree as Opiates.

[d] See the Notes on the former Section, under the Letter [o].

[e] I took *Green* and *Bohea Tea*, of each three Drams, infuſed them ſeparately in ſeveral boiling Pipe Waters, a whole Day and

and the laſt has about a thirteenth Part more Salt than the other, *i. e.* *Green* has one fifteenth Part of a reddiſh Brown, brakiſh, penetrating Salt: *Bobea* $15\frac{1}{13}$ Part of the ſame Salt[e]. The lighter Sortments of Earth that fly off in Decoction and Evaporation of the filtrated Liquor, and the Oil make up $\frac{8}{13}$ and a half of the whole[f]. But the Proportions of theſe Principles drawn off by Infuſion in three ſundry Waters, is different from this; for the whole Phlegm is taken out, and about one half of its Salt[g]; ſomething more than one half of its fixed Earth[g], and a twenty ſeventh Part leſs Oil, than Salt and Earth taken together[g]. But theſe Quantities differ according to the Purity or Mixture

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and Night, and next Day repeated the ſame again; then I pour'd the whole Infuſions and Decoctions of each Sort into two ſeparate Veſſels, and incinerated the Aſhes till they were white, and then put thoſe of the *Bohea* to their own Liquor, and thoſe of the *Green* to their *Tea*, and exhaled both in two wide, ſhallow Pans, till their *Reſiduum* was throughly dried, and their Oil conſumed: On this I poured freſh Water, and filter'd it thrice; then dried the Earth, and exhaled the filter'd Liquors to a dry, reddiſh brown Salt. The *Green Tea* left ſixty one Grains of Earth, and the *Bohea* fifty nine and a half; the firſt had twelve Grains of Salt, and the laſt thirteen. But this Experiment muſt be made very carefully, for I repeated it ſeveral Times with different Succeſs, until I took two Pots of equal Depths and Diameters, and placed them in the ſame Degree of Heat with the Extracts of the firſt Evaporation (having pour'd them out of the Pans when they turned thick, leaſt in ſcraping off the Earth, I ſhould get ſome Iron with it, and be prevented in making a juſt Computation) and let them ſtand over a ſmall clear Fire, till they ceaſed ſmoaking even when removed from it; for the Oil of *Tea* is exceeding cloſely attached to its Earth, and requires Time to be ſeparated from it. 'Tis eaſy to obſerve when the Oil riſes, for after the Smoak of the Phlegm wholly ceaſes, then a palpably thick, blue, ſtrong Smoak immediately aſcends, which riſes and ceaſes by Turns, even after the *Fæces* ſeem dry, eſpecially if taken from the Fire; this thick Oil carries up ſome Earth with it, as the Phlegm did ſome lighter Parts.

[f] For if we take a Quarter of an Ounce of *Tea*, there is eight Grains of Salt, two Scruples of fixed Earth, and four Grains of Phlegm, ſo that ſixty four Grains of Oil, and ſmall light Earth muſt remain: But a tenth Part of *Bohea* being Phlegm and volatile Salt, and only a thirtieth Part of *Green*, i. e. *Bohea* having three Times the Quantity of Phlegm that *Green* contains, and their fixed Parts, after Evaporation not being ſo widely different, therefore *Green Tea* affords more Oil than *Bohea*, the Reverſe of which is the common Opinion.

[g g g] Two Drams of *Green Tea*, infuſed in three ſeveral boiling River Waters, which ſtood two Hours before the laſt was poured off; when the whole Liquor was evaporated, there remained twenty ſix Grains of fixed Earth and Salt; the Leaves taken out of the Pot and dried, weighed one Dram and ſeven Grains; four Grains of Phlegm being ſubſtracted from the laſt, we have twenty three Grains of Oil left; for it being evaporated over an exceeding ſlow Fire, the Earth had no Opportunity to riſe; freſh warm Water being pour'd on the Earth and Salt, and let ſtand a little, then filter'd twice, and the Earth and Cup waſh'd again with warm Water, the filter'd Liquor exhaled, and the Earth dried, I had four Grains and a half of Salt, and twenty

Mixture of the Water uſed in making the *Tea*, as I have already proved by many Experiments. Milk is a much more improper Vehicle than either River or Pipe Water, even when the *Tea* is boiled in it, for its Particles are too groſs and ſmooth to relax the Veſſels of the Leaf, to penetrate, diſſolve, and draw forth its Principles [h].

Different Vehicles extract different Principles.

Thus we ſee that different Vehicles extract different Parts from *Tea*; Water, its ſaline, looſe, ſulphureous and light mucous Parts; rectified Spirits, its fine aromatick Oil; Spirits of Wine and a ſmall Sand Heat, its fixed Oil, or reſinous Subſtance; but ſimple Element, which is free from ſaline, metallick and earthy Parts, (that might either ſtimulate too much, or obſtruct the Diameters of the ſmalleſt Veſſels) draws out moſt of the Principles of *Tea*, in the leaſt Time, and is moſt proper for conveying them into, and mixing them with our Blood: But then this Water muſt be hot, that its Particles may be rarefied, and ſo diſpoſed to penetrate into the Leaves, and diſſolve their Salts, their looſer Sulphur and Earth.

Of Sugar with *Tea*.

Sugar not only makes the Liquor more palatable, by qualifying its bitter aſtringent Taſte, but is alſo a good Cleanſer of the Lungs, and a gentle Stimulator of the Kidneys; and the finer Sugar we uſe, it anſwers theſe Intentions ſo much the better: Therefore groſs, cachectick and heavy Bodies, ſhould uſe the fineſt in their *Tea*; but this being too ſharp and abrading for thin, hectick Conſtitutions, theſe ſhould prefer the more groſs or coarſer Sort, which having more Oil, lubricates and ſoftens more, and ſtimulates leſs, and therefore will ſooner occaſion Obſtructions, and leave a *Lentor* on the Inſides of the Veſſels and Strainers of lax and unweildy Habits [i].

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twenty one Grains and a half of Earth. --- *Bohea Tea*, two Drams, infuſed the ſame Time, in the ſame Sort and Number of Waters, afforded alſo twenty ſix Grains of fixed Earth and Salt, and the Leaf dried again weigh'd one Dram; twelve Grains ſubſtracted from this, for the Phlegm, and we have twenty two Grains of Oil, I had four Grains and a Quarter of reddiſh brown Salt.

[h] I boiled a Dram of *Green Tea* twenty five Minutes over a ſlow Fire, in a Pint of Milk, then ſtrain'd it through a Sieve, waſh'd the Leaves in cold Water, dried and weigh'd them, and found they had loſt only twenty three Grains.

[i] For the coarſer the Sugar the more viſcous it is; its eſſential Salt is more ſtrictly united to its Oil and viſcous Earth, which the Lime-Water, Lees and Eggs, uſed in its ſundry Decoctions and Clarifications, divide and attenuate, or carry down to the Bottom, or raiſe them to the Top in a Scum; and the oftner theſe are repeated, the finer it is. ---- This coarſe Sugar uſed moderately, is a notable Balſamic, and ſerviceable in ſheathing up ſharp Humours, which irritate the Lungs, and excite a troubleſome tickling Cough. —— But where groſs Phlegm loads and ſtuffs the Lungs, double or treble refined Sugar, or white Candy, incide, attenuate, break, and ſeparate this Viſcidity, and gently irritate the Organs

of Reſpiration to pump it up. For this Reaſon it's good in a Cold, when the retained perſpirable Matter is thrown upon the Thoracic Contents, to be from thence diſcharged. This fine Sugar is no leſs uſeful in ſeveral Viſcidities of the Blood, or too great Seroſity of the Juices, the Solids being lax and ſluggiſh; here its fine Salts attenuate and prepare the firſt for Motion, Circulation, and Evacuation; it abrades the ſlimy *Mucus* from the Inſides of the Veſſels; by the Solidity of its ſaline Particles, and the freſh *Momentum* raiſed in the Blood, gives it a better Conſiſtence. Its eſpecially beneficial to the aged, phlegmatic, and ſluggiſh; and to groſs bodied Children, if moderately us'd. It agrees well with cold Climates, foggy Air, Winter-Seaſon and rainy Weather. It's alſo of Uſe in gravelly Caſes, being a fine Diuretic; in all which Caſes it's well adapted to *Green Tea*, joyns Iſſue with, and makes it anſwer better. --- Coarſe Sugar, containing much of its Oil and its Salts not being ſubtilized, nor having their ſharp *Spicula* unſheathed; but being more hid in the coarſe Oil and viſcous Earth; as alſo the Salts of the Lime and Lees; therefore, I ſay, it affords much Oil to the adipoſe Veſicles; in which, with the Adheſion of its fine earthy Parts to the Sides of the Veſſels, make it fitter for thin, meagre, unhealthy, or hectically diſpoſed Habits, whereby it's better ſuited to *Bohea Tea* than *Green*. But fine Sugar is the oppoſite to very choleric Conſtitutions; for being too ſtimulating, it encreaſes the Motion of the Fluids; its Salts wear the Inſides of the Veſſels, and dry the Body; for this Reaſon ſhould meagre Perſons take Care how they make too free with it; nor ſhould they indulge themſelves an Exceſs of the Coarſe; for tho' its Salts are not ſo naked and ſharp as to wear the Veſſels with their Solidity and Number, yet it's too apt to turn acrid, and render the Juices ſuch. Coarſe Sugar is injurious to phlegmatic and bulky Bodies, ſeeing it encreaſes the Oilyneſs and Viſcidity of their Juices, over lubricates and relaxes their Solids, begets many and obſtinate Obſtructions, which frequently terminate in a Cachexy. The much Salt and Lime in fine Sugar, excite Thirſt, dry the Blood, and encreaſe its Motion; therefore ſhould it be ſparingly uſed in hot, dry Weather, hot Countries, and ardent Fevers.

Sugar is imported from both *Indies*, but eſpecially from *Madera*, *Braſil*, and the *Caribbe Iſlands* in the *Weſt-Indies*. It was unknown to our Predeceſſors in *Great Britain*, till *Columbus* diſcover'd the *American* World: The Antients either knew not the Cane, or the Manner of expoſing its Juice; or they were ignorant of the Art of condenſing, hardening, and refining it, and ſo muſt have been Strangers to our Sugar. Some of them mention *Indian* Salt; and withal, that it ſpontaneouſly ouz'd out of the Cane, and harden'd to it like a Gum, and was friable between the Teeth like Salt. *Salmaſius* ſays, theirs was looſening and refreſhing; but ours we find is hot, and excites Thirſt. However, it ſeems, that theirs conſiſting only of the fineſt and moſt mature Parts, which had exuded and condenſed in the Air, was therefore better than ours; the ſame Author alſo aſſures us, that the *Arabs* had the ſame Art of making Sugar 800 Years ago, which we now have. Sugar is the eſſential Salt of the Reed and Cane, prepared by repeated Decoctions and Clarifications; its exceeding Sweetneſs ariſes from the intimate Union of its Salt and Sulphur. Several Authors charge the chief Cauſe of the Prevalency of the Scurvy in the Northern Parts of *Europe*, upon it; becauſe Chymiſts extract out of it a moſt acid, ſharp, penetrating, and diſſolving Spirit. Tho' I am not to anſwer for the Effects of its Exceſs, yet this ſeems a groundleſs, if not ill-natur'd Reflection; for we read of the Scurvy in *Britain* when it was a *Roman* Colony; and we know alſo, that Salt, Honey, Salt Petre, Brimſtone, *&c.* afford more acid and corroſive Spirits; and the firſt of theſe is of far more frequent and general Uſe than Sugar. The coarſer Sugar is ſweeter than the finer; for retaining more Oil, it continues longer on the Taſte; for if the Oil be ſeparated from the Salt, neither of

On what its Aſtringency depends.

How its different Principles act on our Solids and Fluids.

The Infuſions of all the Sorts of *Tea* are reſtringent[k], and their greater or leſſer Degree of Reſtringency, is in proportion to the Weakneſs or Strength of the Liquor drunk, and the Elaſticity or Laxneſs of the Drinker's Fibres. But tho' all theſe Infuſions act as Aſtringents, yet ſome aſtringe more powerfully than others; all Kinds of *Bohea* aſtringe in a leſſer Degree than thoſe of *Green*, and common *Green Tea* more than the *Hyſſon*. And the different Principles of *Tea* act after a different manner on our Fluids, when ſeparated from the reſt; for its Salt diſſolves the Blood[l], its Earth neither attenuates nor coagulates it[m], its Oil

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them is ſweet, but the laſt is acid, and the other is inſipid: But when both are mixed, the Salts penetrating the Pores of the guſtatory Nerves, make Way for the Oil to follow; both entering, and gently evocating, cauſe the Sweetneſs of its Taſte. Sugar was originally the Product of the *Eaſt-Indies*, from thence it was brought to *Barbary* and the *African Iſlands*, as the *Madera's*, *Canaries*, &c. then it crept to the *Weſt-Indies*, as *Jamaica*, *Barbadoes*, *Nevis*, *Antegoa*, *Monſerrat*, &c. and to the *Spaniſh Indies*; then into *Europe*, as *Spain* and *Portugal*, but in very ſmall Quantities. *Maderas* Sugar was formerly eſteemed beſt; that from the *Canaries* next; and laſtly that from St. *Thomas*: But now *Jamaica* and *Barbadoes* are inferior to none; next to them is the *Liſbon*, tho' it is not ſo white, its more fat and oily.

Sugar ſucceeded the Uſe of Honey; and has made the laſt to be almoſt forgot, being diſagreeable to cholerick Conſtitutions, flatulent Bodies, lean Perſons, and thoſe who are ſubject to Inflammations of the *Viſcera*; but yet its better for the phlegmatick, aged, cold or moiſt Conſtitutions, being more healing, inciding, detergent, diuretic and opening. The Antients gave Sugar in Fevers, Hoarſeneſs, Inflammations, ardent Thirſt, Strangury, Heat and Dryneſs of Mouth, Throat, Stomach and Breaſt. The beſt Sugar is ſolid, light, and exceeding white and ſweet, gliſtering like Snow, hard and not ſpongy, melting quickly in Water, *&c.*

[k] I put two ſmall Tea Spoonfuls of warm, ſmall *Green Tea* on a Saucer, as much weak *Bohea* on another, and the like Quantity of tepid Water on a third, and then pour'd two large Spoonfuls of Blood on each of them; after they had ſtood eighteen Hours in the Window of a cold Room, the Blood with Water was the thinneſt, of the lighteſt Colour, and had moſt *Serum* on its Surface, that with *Green Tea* was darker colour'd and thicker, that with *Bohea* was very dark, near to a black Colour, and ſomewhat thicker than the laſt. Note, The Blood was ſtirr'd about as it ſprung from the Vein, to prevent its Coagulation.

[l] I took ſix Ounces of Blood, and preſerving as much as poſſible the Fluidity it had in the Body, pour'd two Ounces of it upon a Saucer, and put to it a Grain and a half of white purified Salt of *Tea*; to other two Ounces, I put two Grains of Salt of Tartar; and on a third Saucer I put two Ounces of Blood only; and ſet all three in a cold Room 'till the next Morning: That with the Salt of *Tea* had ſeparated much *Serum*, and the Blood below it was very thin, and of a light red; that with Salt of Tartar was yet thinner, had more *Serum* on its Surface, and was of an exceeding light cherry red; the Blood alone had neither ſo much *Serum* as the other, nor was its Texture ſo much broke, but continued thicker and of a darker red.

[m] I put a little of the ſmall Earth, which remained in the Cup after the third Filtration, into two Ounces of Blood; but it neither

Oil thickens it a little[n], but its Gum very much[o], whether extracted in an aqueous or ſpirituous Vehicle; and its Oil and Earth extremely contract our Fibres[p].

Having

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neither coagulated nor diſſolved it; all the Effect this had upon it, was only it made it ſomewhat blacker.

[n] Putting ſome of the Oil which hung on the Iron Cover of the Crucible into one Ounce of Blood, it made it much blacker and thicker than that which ſtood upon a Saucer by it ſelf without any Mixture.

[o] Taking three Saucers, with two Ounces of Blood on each, I mixt with one three Grains of *Tea* Gum, drawn with Spirits of Wine; with another, three Grains of this Gum drawn with Water, but made no Addition to the Blood on the third Saucer: I ſet them in the ſame Window as before, and let them ſtand twenty four Hours: The firſt was very black and thick coagulated, (tho' its Coagulation, after it was drawn from the Vein, had been prevented,) and its Surface was dry; the ſecond was neither ſo thick, nor black, but moiſt, and had a little *Serum* on its Surface; the laſt was of a light red, and abounded with *Serum*. When they had ſtood two Days more, above two parts of this was clear Water, and its Bottom was only a light red Gore, but the firſt was ſcarce moiſt at Top, and the ſecond had ſeparated about one Dram of *Serum*.

[p] I took ſixty four Grains of a long thin Muſcle, on the Inſide of a Shoulder of Mutton, the Length of the Muſcle was five Inches and four eighths. I ſeparated the Fibres longitudinally into four Parts, and put one into a Spoonful of Water, wherein was diſſolved four Grains of *Tea* Gum extracted in Spirits, another into a Spoonful of very ſmall *Green Tea*, a third into a Spoonful of *Bohea Tea*, the fourth into a Spoonful of warm Water, and let them ſtand twenty four Hours; then took them out and meaſur'd them again, the firſt was become very rough, hard, and twiſted up like a Cat-gut before a hot Fire, and when laid on the Rule or Meaſure, was only three Inches and a half long; its utmoſt Stretch, without breaking, was but four Inches: The ſecond was three Inches and five eighths; at its utmoſt Stretch four Inches and a half: The third was four Inches and one eighth, and its furtheſt Stretch five Inches: The fourth was four Inches and ſeven eighths, and extended to ſix Inches two eighths, but broke in two Places.

Corollary 1. From theſe Experiments we ſee, That the Aſtringency of *Tea* depends upon the cloſe and ſtrict Union of its Oil and Earth; for its Salt diſſolves the Blood, and alſo its Salt and *Caput Mortuum*, in Proportion to the Quantity of Salt in that Earth; its Oil thickens it a little, but the Oil and Earth together act in a high Degree of Reſtringency. When ſeveral Waters had drawn off as much Earth as was ſeparable that Way, tho' Copperas turn'd the Liquor of a light Blue, for two or three Infuſions more, yet theſe had no ſenſible Reſtringency, becauſe then the light ſeparable Earth was drawn off, and that which gave the Tincture was Oil only. Again, when we came to make a ſtrong Decoction, this freſh violent Motion and Agitation of the Leaf, ſeparated and brought off freſh Earth with the Oil, which revived its Aſtringency, and reſtor'd its blue Tincture with a Solution of Copperas; and when the Decoction could not looſe or ſeparate any more Earth, then the bitter aſtringent Taſte was loſt as before: But the Leaf dried again, put into a Crucible, and ſet in an open Fire, afforded a more fixed Oil and Earth, more bitter and aſtringent than any of the former. *Corol.* 2. Hence we ſee, that Aſtringents, by the Aſperity of their Particles, corrugate the Fibres and Membranes, and make them draw up cloſer, and by thickning the Fluids, prevent them from running off ſo

faſt

Having enquir'd into, and diſcover'd the Principles of *Tea*, it remains that we apply its Virtues and Uſes to particular Caſes; which *Sim. Pauli* affirms

faſt as before; and therefore Aſtringents are called Strengtheners, and differ from Stypticks only in Degree of Efficacy. *Corol.* 3. Strengtheners act upon our Solids, not only by bracing them more firmly, and expelling the ſuperfluous ſlow Juices in the ſmall Veſſels, whereby they act more powerfully upon the remaining contained Liquor; but by adding Bulk to the Solids, in a daily Supply of proper Earth. Now the Strength of different Animals of the ſame Species, or of the ſame Animals at different Times, is by ſeveral, demonſtrated to be in a triplicate Proportion of the Quantities of the Maſs of Blood; for all the Strength of an Animal is the Force of the whole Fibres of all the Muſcles taken together; therefore all Reſtringents increaſing the Strength increaſe alſo the Force of the Muſcles. But Reſtringents preventing the too profuſe Waſte of Fluids, may ſo thicken and increaſe the Quantity of the Blood, as to diminiſh the Strength of the Animal; for the *Æquilibrium* betwixt the Blood and the Veſſels being deſtroy'd, the Strength is wonderfully impair'd, as in a diminiſh'd Perſpiration: Though this increaſe the Blood, yet it leſſens the Strength, becauſe the retain'd Matter, which ſhould have been expell'd, ſo alters the Maſs of Blood, as renders it unfit for muſcular Motion. Suppoſe the increaſed Quantity to be joyned by an extraordinary Viſcidity, the ſmall ſeparable Parts decreaſing as the Viſcidity increaſes, the Quantity of animal Spirits ſeparated in the Brain will be leſs, and the Tenſity of the Fibres, being in Proportion to the animal Spirits, and their Diſpoſition to Motion, the Fibres cannot counterpoiſe the great Weight of the Blood, and hence muſt follow a Decay of Strength. *Corol.* 4. Hence we ſee why *Green Tea* is a greater Aſtringent than *Bohea*, tho' the firſt contains more Oil, *viz.* Becauſe the Oil of *Green* is more firmly cemented and attached to its Earth, therefore I always found the ſeventh Infuſion or Decoction of this, as much tinctur'd by a Solution of Copperas, and depoſited as much Sediment, as the fourth or fifth of *Bohea*: And as the Oil of this is leſs and more ſeparable, ſo 'tis thinner, not having ſufficient Time on the Shrub to become of a reſinous Nature, and be incorporated into the very Subſtance of its earthy Principles. *Corol.* 5. From the triple Decreaſe of Weight in *Bohea* more than *Green Tea*, in the former Experiments, though it ſeem really Phlegm that exhales; yet this is not reconcileable either with Reaſon or Experience, for both having had the ſame Advantage of roaſting and curling, and the Leaf of *Bohea* being more tender and porous, and its Veſſels larger, we cannot imagine but it muſt part with its Phlegm ſooner, and more eaſily than the other, whoſe Veſſels are more compact, and the Phlegm entangled with more Oil: We muſt therefore allow a part of this Loſs to conſiſt of the more ſeparable, ſubtile and fine Salts: But theſe Salts in the tender Buds, partaking more of an acid Nature than in the full grown Leaf, therefore *Bohea* muſt contain more of a narcotick Quality than *Green*; theſe remaining ſubtile Salts, being more acid, will conſequently prick the Nerves more, and we are in greater Danger of Stupidity, Tremors, and ſickly Fits from this than from *Green Tea*; and it will (generally ſpeaking) affect the nervous Syſtem more ſenſibly and frequently. --- From the whole preceding Courſe of Experiments, we ſhall have ſo much Light and Certainty of its Nature and Properties, that our following Diſcourſe, on the medicinal Qualities of its dietetick Uſe, will flow as ſo many eaſy and conſpicuous Corollaries. And that we may form a clearer and more juſt Idea of the manner of its Operation, I think it neceſſary to mention what ſeems to me the true mechanical Cauſes of thoſe Diſtempers, wherein the Uſe of *Tea* is recommended or caution'd againſt.

affirms to be local, and do not hold with *European* Inhabitants: But *Pechlin* refutes this Opinion, maintaining that it is good in many Diſeaſes.

1. *Tea* good in Diſeaſes of the Head, from a *Lentor* of the Blood, and a Laxneſs of the Veſſels.

And doubtleſs 'tis of ſpecial Service in Diſorders of the Head, proceeding from cold and ſluggiſh Cauſes, which ſo alter the Maſs of Blood, Lymph and Spirits, that they have not a free Courſe thro' the Veſſels of the Brain, but adhering to their internal Surfaces, either ſhorten or ſhut up their Diameters; ſuch is a ſizy, thick, pituitous Diſpoſition of the whole Maſs of Blood, which, when it arrives at the ſmall and tender Veſſels of the Brain, their inherent Force not being equal to the Strength neceſſary to propel a viſcid Fluid along their Canals, its Motion is therefore ſlow; but the quickeſt Motion being always in the Axis of the Veſſels, from the repulſive Colliſion or Reſiſtance of the Sides, and the moſt fluid Parts of the Blood being ſuſceptible of the greateſt Motion, theſe will therefore be chiefly propelled; while the more viſcid Parts, unapt for Motion, as they conſiſt of groſſer, leſs prepared, or more attractive and adheſive Particles, give the greateſt Reſiſtance to the Actions of the Solids and Veſſels, and lie neareſt their Sides, which being weak, ſoaked in Humidity, and over lubricated, have not Force to ſhake them off, and throw them into the Axis; therefore they firſt move ſlowly, then lie ſtill and ſtick to the Sides of the Veſſels, where they attract other Particles of the like Nature, till they ſhut up the Veſſel, and prevent the Motion of the Blood or Lymph.

Now what Diluter can be better in this Caſe than *Green Tea?* For the Water thins, its Salts ſeparate the ſluggiſh Maſs, they ſtimulate and invigorate the Veſſels, increaſe the Celerity of the Blood's Motion, its Earth and Oil draw up and contract the relaxed inelaſtick Tubes, and diſpoſe the ſlimy adheſive *Mucus* to be thrown back into the circulating Maſs, and thereby widen the narrow, and open the obſtructed Veſſels of the Brain. The Fluids being thus diſpoſed for Motion, and the Veſſels for Action, the different Coheſions of the firſt will be broken and expell'd by proper Outlets: The Blood being thus thinned, 'tis fitter to paſs all the Meanders, Windings and Circumvolutions of the Brain, and have its nervous Juice ſtrain'd off in greater Plenty, which will invigorate the Fibres and Solids of the Body, whereby the Veſſels and Muſcles will perform their Office more effectually, with more Eaſe and Speed, and longer; and a beginning Heavineſs, Dulneſs, Drowſineſs, Lethargy, or *Coma* cured, and their dangerous Paroxyſms prevented, or ſet further off.

In a Lethargy, Apoplexy, Catalepſy, Dulneſs and Drowſineſs.

This Liquor is no leſs beneficial in preventing a threatned Apoplexy or Catalepſy from theſe Cauſes; for that the Body is in Danger of a

Seizure, or Attack from thoſe ſleepy Diſeaſes, may be foreſeen from active Perſons becoming lazy and idle all of a ſudden; turning dull, ſleepy and indifferent to all Exerciſe or Motion; their Speech is ſlower than uſual, they ſometimes throw up Phlegm, their Eyes are pale, turgid, moiſt and dim, their Head ſwims, they breath with more Difficulty after Exerciſe or Motion, they have frequent Tremors, and Snortings, and are Hag-ridden. All theſe Symptoms proceed either from a natural lax Fibre and ſluggiſh Blood, or by making too free with meally Aliments, and unripe rough Fruits, or by diminiſhing former neceſſary Motion, or a too great Waſte of the more fluid Parts of the Blood thro' the relaxed ſecretory Veſſels, or from a want of good Blood, or Deficiency of Bile, or a Retention of the thicker Part of the Blood and Humours, or their Adheſion to the Inſides of the weak and lax Veſſels, *&c.*

Green Tea good in Diſeaſes ariſing from the Thickneſs of the Blood, or its Abundance of earthy Particles which make it grumous.

Green Tea is no leſs ſerviceable in Lethargies, Apoplexies or Head-aches, from an Adheſion of the thicker Parts of a gruminous Blood to the Inſides of the Veſſels, whether in the carotid or vertebral Arteries, or in the ſmall Veſſels of the Brain; for if theſe grumous Parts of the Blood ſtick long to the Veſſels, they will produce polypous Contractions, either within the *Cranium* itſelf, or in the Heart or great Arteries: Theſe in the Heart muſt be ſucceeded by a Palpitation and unequal Pulſe; thoſe in the Brain, by a Swimming of the Head, and Dimneſs of Sight, upon a ſmall Increaſe of Motion or Heat. Now the dietetick Uſe of *Tea* diſſolves theſe grumous Adheſions; and if the *Polypus's* be not yet formed, prevents their Concretions, cleanſes the Veſſels, and by a gentle Stimulation and Corrugation, increaſes their Force and Action, whereby they prevent the Blood's running into ſuch pernicious Combinations. In the former Caſes the *Tea* ſhould be drunk very ſtrong, and in a midling Quantity Morning and Afternoon; in the latter, weaker and more plentifully, and be attended with Exerciſe in both. *N. B.* In this, and the whole following Diſcourſe, I ſuppoſe the Drinkers betwixt ſixteen and ſixty Years of Age.

It anſwers the like Deſign in Diſeaſes from an Inflammatory State of the Blood.

If Diſeaſes proceed from an inflammatory Thickneſs of the Blood, diſcoverable by a ſharp, conſtant Fever, a chronick and violent inflammatory Pain of the Head, and a Phrenzy, with a Redneſs, Tumor and Inflammation of the Eyes, (cauſing involuntary Tears) and the Face; then ſmall *Green Tea* drunk plentifully, after ſufficient Evacuation by Bleeding, thins the Blood, and leſſens its Reſiſtance againſt the Veſſels, cauſes it to move more eaſily, to mix better, and afford more animal Juices, and fits it for Nutrition and Evacuation, *i. e.* It brings the mutual Reſiſtance and Force of Solids and Fluids nearer to an *Equilibrium*; for all theſe Symptoms ariſe from an increaſed Circulation of the Blood, in proportion to its Conſiſtence; but this Conſiſtence being too thick, and it meeting with no Hindrance in the greater Veſſels, they muſt exert a greater Force over it, and throw it into the ſmaller; which being weaker, and not capable of great Oppoſition, either as to the thick Liquor, or the unnatural ſuperior Force of the emptier great Veſſels, they muſt therefore be loaded and overpower'd with a thick Maſs, which by its ſlow Motion loſes its natural and due Conſiſtence, and being more at reſt ſeparates into different Parts: But the ſmall reſtringed Veſſels exerting their greateſt Force in reſiſting this unwieldy Load, the Blood not being ſo ſuſceptible of Motion, reſiſts them again; and the Parts of the Blood oppoſing the Celerity of each others Motion, cauſes a great Heat and Redneſs of the external Parts. In the mean time, the thinner Parts of the Blood being ſtill ſuſceptible of Motion, by the *Conatus* of the ſmall Veſſels, they are thrown back into the Veins and greater Veſſels, while the thicker continue in the ſmall, which diſtend and ſwell the Parts: Hence a full Eye, involuntary Tears, and a Heat of the Parts, from the mutual Attrition of the Parts of the Blood againſt one another, and of this againſt the Veſſels, and they againſt it: But the Veſſels being ſtimulated and contracted by the Uſe of *Tea*, and the Blood fitted for Circulation, Secretions and Evacuations, the Balance of Nature is brought nearer, and the Body relieved.

Green Tea good in a *Vertigo*, or ſwimming of the Head.

In a *Vertigo*, or ſwimming of the Head, when Objects ſeem to turn round, becauſe the Images which proceed from them fall ſucceſſively upon different Parts of the *Retina*, from the lateral Preſſure of the Arteries, and a Concuſſion of the *Retina* and Optick Nerve, occaſion'd by the Extenſion, Oppreſſion, and Load of the Arteries. *Green Tea* drunk (not too ſtrong) once or twice a Day, after bleeding and vomiting, will be very ſerviceable in removing this Indiſpoſition, becauſe 'tis of a diluting, attenuating, cleanſing, ſtimulating, and invigorating Nature; the Water, wherein 'tis infuſed, thins the Blood, its ſaline Particles give it a freſh *Momentum*, cleanſe the Inſides of the Veſſels, ſeparate and divide the Coheſions, and give ſuch a *Stimulus*, that tho' they are too fine to be perceptible any where elſe, yet when they enter into the ſmalleſt Fibres, by their pricking and ſhaking of them, they irritate their Vibration, and prevent the future Lodgment of that uſeleſs Load in the Cavities of the Veſſels, or their Interſtices, which clogs their Motion, and relaxes their Coats and Membranes [q].

Another

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[q] *Dom. Ambroſ. Stegmann. de Decoct. Herb. Theæ, Miſcel. Cur. Vol.* 5. p. 36. tells us of a Woman, who from a Fright ſhe received when in Labour, fell into an Epilepſy, in which ſhe continued three Months, and by his Direction was cured of

It diſpels Drowſineſs and Clouds that hang over our intellectual Faculties, and enlivens our Ideas.

Another Thing which mightily ingratiates the Uſe of this Liquor to Men of a ſprightly Genius, who court the Continuance of their lively and diſtinct Ideas, is, its remarkable Force againſt Drowſineſs and Dulneſs, Damps, and Clouds on the Brain and intellectual Faculties[r]; for it

keeping

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of it by drinking *Tea*. And *p*. 37. He gives us an Account of a Boy ſeven Years old, who daily had frequent Convulſions, like an Extaſie, and when both inward and outward Means had been long uſed in vain, by the Direction of ſeveral Phyſicians, he adviſed him to drink *Tea*, which cured him. *p*. 38. He ſays he cured many Children who had Convulſions, after the Small Pox and Meaſles, with this Liquor: I ſuppoſe he means by the Infuſion of *Green Tea*.

[r] The Reaſon why *Tea* creates ſuch a vigilant Vivacity, diſpels Heavineſs, and is therefore beneficial to lucubratory Students, is, 1. The gentle Irritation which the Salts give to the Fibres, whereby the Courſe of the nervous Fluid is rouſed and determined, and commanded into the Muſcles to prevent their falling back; but the Aſtringency of the Liquor contracting the Fibres, cauſes this Juice to circulate more briſkly in the Brain: Hence comes a more plentiful Stock of animal Spirits, to ſupply the Organs of the intellectual Faculties. 2. By this Stimulation it not only begets a better Contraction in the exquiſitely ſenſible nervous Coat of the Stomach, which is quickly communicated to the Brain, whereby it ſhakes off that Load of Juices in its Veſſels, which diminiſh'd their briſk Tone, and Derivation of Spirits into the Nerves, which occaſion'd a Drowſineſs and Inclination to Sleep, (for Contraction is oppoſite to Sleep, which is a State of Indolence and Relaxation) But the exceeding fine Earth and fixed Oil help to repair the Waſte the Veſſels have ſuſtained by the Day's Exerciſe or Labour, and give them a freſh Supply, and better Firmneſs; for tho' the ſeparable Parts of *Tea* be not volatile, yet they are exceeding fine and ſolid; the laſt Rubs of the adheſive latent *Lentor* from the Sides of the Veſſels, where they are furr'd up, and conſtitute a Part of them, where their Sides are clear and lie open to the Touch. --- The Reaſon given for this Vivacity, by the Liquors binding and ſhutting up the Mouth of the Stomach, and preventing the Riſing of its Fumes into the Head, is ridiculous; there being no other Paſſage for thoſe groſs Exhalations to aſcend by, but thoſe of the Blood; therefore the Diſorders of the Stomach cannot be the primary or immediate Cauſe of the Affections of the Brain, but the ſecondary only. For tho' an agreeable or pleaſant Senſation from Meat or Drink upon the Stomach, (eſpecially after intenſe Cold or Hunger, which contracts the Solids) may cauſe a ſoft undulatory Motion of the nervous Juices, and ſo relax the Nerves, and occaſion a Deſire to ſleep, yet the Aliment upon the Stomach is the Cauſe of this ſweet Senſation and gentle Relaxation; or if we ſuppoſe that Hunger has created Pain and Watchfulneſs, the Stomach is not the firſt Cauſe of this, but the acid glandular Juice diſcharged into the Stomach, and the Attrition of its Coats or Sides againſt one another in its Motion, when no intermediate Body lies betwixt them to be acted upon: Or ſhould Flatulency abound in the Stomach, 'tis the *Flatus's* which diſtend its Coats, ſtretch them beyond their Tone, and from the Origin and Communication of the Nerves, raiſes a Pain in the Head. Acid or acrid Humours lying on the Stomach, prick its Nerves, which being communicated to the Brain, cauſe Pain of the Head. Too much Heat likewiſe relaxes the Solids, and diſpoſes the Body to Sleep: Here the Infuſion of *Green Tea* comes in as a very ſeaſonable Reſtringent to brace up the relaxed Fibres, and reſtore them a better Tone: Hence the Uſe

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keeping the Eyes watchful and clear, animates the intellectual Powers, maintains or raiſes lively and briſk Ideas, excites and ſharpens the Thoughts, gives new Vigour and Force to the Invention, awakens the Senſes, and ſtrengthens and clears the Underſtanding; becauſe by its thinning the Blood, through the Miniature of its Salts, it enters into, cleanſes and clears the Glands of the Brain, increaſes the Secretion and Diſtribution of animal Juices, which compenſate the preceding Loſs of Spirits, whether ſpent on the intellectual or bodily Organs, it afreſh invigorates the Fibres and Veſſels, takes off that Laxneſs and Sluggiſhneſs which cauſes a Neceſſity of Sleep: The neceſſary Evacuation by the Skin and Kidneys are duly and regularly carried on at the ſame Time, ſo that the Body is not loaded with ſuperfluous Juices, which make it dull and indiſpoſed. On which Property *Waller* has thus deſcanted.

> *The Muſes Friend,* Tea, *does our Fancy aid,*
> *Repreſs thoſe Vapours which the Head invade,*
> *And keeps that Palace of the Soul ſerene*
> *Fit on her Birth-day to ſalute a Queen.*

It is good againſt frightful Dreams.

And becauſe it promotes a free Circulation of the Blood, gently deterges and comforts the Brain, that there is no Load, ſlow Circulation or Stoppage in any of its Veſſels and Glands, therefore the Perſon, who frequently drinks it, is not terrified with frightful Dreams, unleſs he has loaded his Stomach with fleſh Meat, and goes to Bed before Digeſtion, which compreſſes the deſcending Trunk of the great Artery, whereby greater Surges of Blood are ſent up to the Head, to fill the Veſſels, and diſturb a free Circulation.

And for Megrim and Head-ach.

And as Pains of the Head and Megrim owe their Riſe either to a ſtuffing of the Veſſels with a groſs ſizy Blood, or a Diſtention with an inflammatory Fluid, ſo that which thins and attenuates the firſt, and promotes the Digeſtion and Secretion of both, muſt be ſerviceable in this Caſe; and the drinking four or five Diſhes of *Green Tea* once or twice a Day, will have this Effect, if not too ſtrong, for then its Stimulation

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of *Tea* muſt be very advantageous in *China*, and other hot Countries. --- *Kircher*, *lib.* iv. of his *China illuſtrata*, takes Notice of *Tea* for clearing the Head, and opening the urinary Paſſages. *Alex. de Rhodes*, in his *Voyages & Miſſion Apoſtolique*, ſays, He always cur'd himſelf of a periodical Pain in his Head by *Tea*, and having often Occaſion to ſit up whole Nights in *China*, to take the Confeſſions of dying People, he found ſuch Benefit from *Tea* in thoſe great Watchings, that he was always as vigorous and freſh next Day, as tho' he had reſted all Night in Bed: Nay, by the Aſſiſtance of *Tea*, he ſate up, as he ſays, ſix Nights together. *Vide* Dr. *Chamberlain* in *Treat. of Coffee, Tea and Chocol.* 12°. 1685. *pag.* 46.

is too great: But to prevent frightful Dreams, 'tis beſt to take three or four Diſhes in the Afternoon, but not too ſtrong, leſt it cauſe Watchings, and to forbear a Fleſh Supper after it: The ſame Time and Quantity is beſt to prevent Drowſineſs,

Againſt Diſeaſes of the Eyes.

In Diſeaſes of the Eyes, as Weakneſs, Dimneſs of the Sight, involuntary Tears, *&c.* from a Dilatation of the Glands, Diſtention of the Veſſels, and Tranſudation of the Humours, or from an Increaſe and Condenſation of the Coats and Humours, or a Lodgment of Viſcidities in the ſmall Veſſels, and their diſtending and preſſing upon the Optick Nerves, and preventing their free Communication with the Brain, whereby they emaciate, waſte or ſubſide; or from a ſimple *Plethora*, which overfills the Veſſels, whereby the thinner Parts are ſtrained off, and the thicker left behind: In all theſe Caſes the Uſe of *Green Tea* is ſerviceable, for it lubricates the rigid, ſtimulates the lax and dilated Veſſels, thins the thick, attenuates the viſcid, and obtunds the acrid Blood, diſſolves the coagulated, and by invigorating the Nerves and Muſcles, they ſhake off the ſtagnated Juices: But in a Laxneſs and Dilatation of the Glands and their Coats, it muſt be drunk pretty ſtrong and warm, in the other Caſes weak and temperate.

In Dulneſs of Hearing from a Relaxation of the *Tympanum*.

In Relaxations of the Drum of the Ear (if not chronick) from cold, or other recent Afflux of pituitous Juices on the Veſſels of its delicate Membranes, the Uſe of *Green Tea* is adviſeable [s].

In Rheums and Catarrhs.

And 'tis of ſpecial Service in Rheums and Catarrhs, whether of the Noſe, Throat or Breaſt, if drunk ſtrong, four or five Diſhes Morning and Afternoon. For thoſe Diſeaſes being a Defluxion of ſharp *Serum* from the Glands about the Head and Throat, are often the Effects of diminiſhed Perſpiration, commonly called a Cold; for then what ſhould be ſeparated and diſcharged by the Skin, falls upon the Glands of the Head, and irritating them, cauſes a ſneezing, running of the Noſe, or a Cough, and ſometimes Dulneſs of Hearing: Or theſe Catarrhs may proceed from whatever occaſions a too great Accumulation of *Serum*, either in the whole Body, or in theſe Parts; ſuch as the Diminution of renal or cuticular Secretions, which liquefies the Blood, and weakens Digeſtion; or from a natural Laxneſs of the Coats of thoſe Glands, or a greater Flux of Humours to, or a ſlower Motion of the Blood about the Head. Now the Glands about the Head and Throat, are the moſt ſuſceptible of this increaſed Quantity of *Serum*, becauſe they are provided with the leaſt Helps, either to oppoſe, or throw it off after it is lodged. For this Reaſon alſo, Perſons who have the Quantity of this *Serum* increaſed, are dull and unactive, becauſe the Glands and Veſſels of the Brain being weak and dilatable, they will ſuſtain a great Share of the Load, which diſtends the Blood Veſſels, and compreſſes the Roots of the Nerves. Hence there is neither ſo much animal Juices ſeparated from the Blood, nor is its Influx into the Nerves and Muſcles ſo free, ſo that they become reſty, ſluggiſh and inactive: But the Spirits being kept undulating in the Brain, they cauſe Anxiety, Reſtleſſneſs, ſhorter diſturbed Sleeps, and being ſent off into the Nerves of involuntary Motion, the Heart is invigorated, the Action of its Muſcles is increaſed; hence a quick Pulſe and Heat. Now in all theſe Diſorders, *Green Tea* attenuates the Blood, gently pricks the Veſſels, increaſes or raiſes their *Momentum* againſt the Fluids, helps to reſtore their natural Fluidity, and homogene Mixtures, for tho' in a weakened State of Digeſtion, our Aliments be changed into a kind of Fluid, yet the Attrition or Attenuation of the Chyle is not ſufficient to make it of due Mixture and Conſiſtence, with a healthy Blood; therefore will its groſſer Particles readily ſeparate again from it, whenever the Strength and Velocity wherewith it was expell'd the Heart, turns weak; and this will be the Caſe of the Glands about the Head, which are both numerous and weakly fenced: But *Tea* ſtrengthening the *Viſcera*, promoting Digeſtion, Circulation and Secretion, will help the Veſſels to attenuate and aſſimilate the Chyle to the Blood, and prevent the Attraction and Lodgment of its groſſer Parts in theſe Glands; whoſe Coats being alſo corrugated aud invigorated by the gentle Pungency of its Salt, and Aſtringency of its Earth, will give a more ſenſible Reſiſtance to the Blood's *Impetus*, and prevent the Reception of too large a Quantity: Hence leſs *Serum* will be ſtrained off, and the Rheums and Catarrhs helped or healed[t].

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[s] Dr. *Jo. Ludov. Apinus*, *Obſ.* 70. *Decur.* 3. *Miſcel. Curioſ.* gives an Inſtance of a learned Man who had been long Deaf, and uſed Iſſues, Spirit of *Sal Armoniack*, Purges, *&c.* in vain; but was ſpeedily and perfectly cured by drinking *Tea*: He had frequently before a ſounding in his Ears, follow'd with a Crack, after which he heard better for ſome Days.

Bohea Tea uſeful, 1. In a conſtant lean Habit of Body, from a too plentiful Perſpiration.

Where Perſpiration is too great, the Force of the Fibres and Veſſels too ſtrong, the Circulation rapid, the Blood ground down, and the Body always lean and thin, *Bohea Tea* is very ſerviceable, becauſe it adds much freſh Sulphur, or fine Oil to the Juices, which lubricates, ſoftens and relaxes the Fibres and Veſſels, prevents or diminiſhes their too great elaſtick Force, Dryneſs and Criſpneſs, leſſens the immoderate Expence of the Fluids by the Skin; the Solids act not with ſo great Celerity and Force, the Blood's Circuit therefore is not ſo rapid, nor its Parts ſo quickly attenuated or expell'd, and hence the Body is better nouriſhed [u].

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[t] Thoſe employed in the *Dutch* Embaſſy to *China*, obſerv'd that the *Chineſe* ſpit very little, and are rarely afflicted with the Gout or Stone, which their Phyſicians impute to the liberal Uſe of *Tea*. *Tom*. 3. *Philoſ. Tranſ.* N°. 14.

2. In ſpitting of Blood.

In Spitting of Blood, whether it be from the Delicacy and Tenderneſs of the Pulmonary or Bronchial Veſſels, or the Force, Velocity or Acrimony of the Humours, which (if not hereditary) is moſtly the Effect of an indiſcreet Uſe of hot, aromatick, ſaline or animal Food, ſtrong Exerciſe, eſpecially of the Lungs, by coughing, ſinging, playing, ſhouting, or much and loud ſpeaking, too much Freedom with ſpirituous Liquors, violent and frequent Paſſions of the Mind, Suppreſſion of uſual and neceſſary Evacuations; theſe, or whatever elſe may increaſe the Quantity, Acrimony or Velocity of the Blood, and withal determine the ſame to the Lungs, with a Force ſuperior to their Reſiſtance: Here, after diminiſhing the Blood's Quantity, and labouring to reunite the ruptur'd Veſſel or Veſſels, we ſhould correct the Rapidity, Heat and Acrimony of the Humours, by the Uſe of emollient Balſamicks; which Title *Bohea Tea* challenges, ſeeing it abounds with Oil [x], which nouriſhes much, checks the Stimulation, and blunts the Acrimony of the Salts, and repleniſhes the Blood with healing balſamick Parts. In this Caſe it muſt be drunk pretty ſtrong, with very coarſe Sugar, to five or ſix Diſhes in a Morning, and three or four in the Afternoon, with two Tea Spoonfuls of thick Cream, and the Yolk of an Egg in every Diſh [y].

This

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[u] Theſe Effects of the *Bohèa Tea* are not ſo much owing to either the Quantity, Smoothneſs, or Fineneſs of the Sulphur, as 1. To the ſmall Quantity of indiſcoverable Acid reſiding ſtill in the Leaf, and drawn off in Infuſion; for in all theſe rapid Motions of the Blood, and too great Strength and elaſtick Force of the Veſſels, there's a ſecret acrid Salt, ſtimulating the Solids, and fuſing the Fluids; and 2. To the ſmaller Coheſion of its Earth and Oil, which makes it leſs Aſtringent, or fit for adding Bulk and Firmneſs to the Veſſels themſelves, whereby they may become more elaſtick. 3. To the Looſeneſs or Spongineſs of the Earth, whereby it acts after the Manner of a lower abſorbent in ſheathing ſome acrid Particles. 4. To its retaining a greater narcotick Quality than the *Green*; hence 'tis a kind of ſmall Opiate to the Body.

[x] Not that *Bohèa* contains a larger Quantity of Oil than *Green Tea*, for Reaſon and Experiments prove the contrary, but its Oil is more ſeparable, leſs attached to its Earth, and therefore comes off more freely in a ſhorter Time; and becauſe it is leſs aſtringent, it raiſes not ſuch a Contraction of the Veſſels, nor ſo quick a throwing about of the Blood in the Body, gives the nutritive Juices a better Opportunity of Application and Appoſition to the Sides of the Veſſels, which is Nutrition.

[y] The Yolk of an Egg, with a *Tea* Cup full of Cream, and, if Circumſtance and Convenience will allow, two Drops of Oil of Cinnamom added, will make an exceeding good Mixture, ſufficient to ſerve two or three People to mix with their *Tea*, for Cream being chiefly the Oil of the Milk, and the Yolk the moſt nutritive Part of the Egg, they are both lubricating and nouriſhing: The Oil is a ſingular good Cordial and Strengthener.

3. In Ulcers or Abſceſſes of the Lungs.

This may alſo be of Service in Ulcers and Abſceſſes of the Lungs, with Difficulty of Breathing, a dry frequent Cough, eſpecially after Eating or Motion, often returning Fits of a Hectick Fever, great Anxiety towards the Evening, and Night Sweats: Here *Bohea Tea* uſed as above prevents the Abſceſs or Ulcer from increaſing, and defends the Blood from the purulent Matter mixing with it, for it eaſily and readily paſſes the Lungs, without forming new Obſtructions near the impoſtumated or ulcerated Parts; its vulnerary and balſamick Particles correct and ſoften the acrimonious Humours, and hinder their Putrefaction. It is alſo ſomewhat diuretick, and aſſiſts in determining the Humours that Way to the Relief of the Lungs, and makes the Expectoration of the purulent Matter more eaſy.

4. In Obſtructions of the Lungs from a Viſcidity of Humours cauſed by too great Heat or Motion.

In Obſtructions of the Lungs occaſion'd by a Viſcidity of Humours, from too great Heat and Motion, (which is diſcoverable from a Contractedneſs of the Fibres, a ſtronger and quicker Pulſe, and Urine of a higher Colour) or the drinking of ſpirituous Liquors, profuſe Sweats, being expoſed to cold froſty Weather, North and Eaſt Winds, which diminiſh Perſpiration, determine the Humours to the Lungs, and make their Veſſels narrower, or obſtruct them; or they have had cutaneous Eruptions, which by the Viſcidity of the Fluids, and Contraction of the perſpirable Veſſels, are retir'd and fallen on the Lungs, and increaſe the Quantity, Heat, Motion, and Acrimony of the Humours; and by the increaſed Heat and Preſſure of the Veſſels on them, are compacted and preſs'd together, adhere with a larger Surface, and ſo have Globules larger than the Capacity of the tranſmitting Veſſels. Here, after Bleeding and gentle Purging, the Uſe of *Bohea Tea*, of a middle Strength, and drunk freely, as above, dilutes and diſſolves theſe Humours, not without ſome Detergency of the Veſſels. How Detergents act, ſee under that Head upon *Sage*.

5. In a violent Tickling, laborious Cough, from the Sharpneſs of the *Serum*.

In a violent laborious Cough which abrades the Inſides of the Windpipe, takes off its lubricating defending *Mucus*, whereby it's quickly irritated by the cold Air, or by the Sharpneſs of the glandular Humour there ſeparated. Here oily Medicines [z] often relax the Stomach, increaſe the Viſcidity of the Humours, relax the Glands, and leſſen their Reſiſtance of the Humours thrown upon them. In this Caſe *Bohea Tea* affords a fine Oil and balſamick Particles, which relaxes not the Coats of the Glands, nor turns the Blood rancid; and therefore is a good Morning Diet, and Afternoon Diluter, if it affects not the Nerves.

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[z] *Viz.* Coarſe Oils not only relax the Stomach, but they are apt to grow rancid, thicken the Blood, and ſtimulate the Veſſels more, and encreaſe the Cough.

6. In Pleuritick Affections. In Pleuritick or Peripneumonick Diſorders, or Pains in the Sides, from a Diſtention of the Pulmonary or Pleuritick Veſſels with a ſizy Blood, ſuch as cannot down with Lineſeed or Mallow *Tea*, may find a proper *Succedaneum* in this, ſeeing it dilutes and attenuates the Blood, and ſoftens the rigid Veſſels, ſo as the groſs Particles may paſs. Thus I have thrown the chief Uſes of *Bohea Tea* together; and to theſe I might add its Fitneſs in Ulcers and Abſceſſes of the Reins and Bladder, where ſtimulating Medicines are improper, and only Lubricators fit: But I haſten forward [a].

In Obſtructions of the Lungs, from viſcid Blood, and weak Veſſels. In Obſtructions of the Lungs, owing to the Viſcidity of the Humours from their too ſlow Motion, diſcoverable from a ſoft flaccid Habit of Body, a weak ſlow Pulſe, a languid Circulation, pale Urine and no Thirſt, as reſolving of the impacted Humours, and attenuating the viſcid, and invigorating their Motion, are neceſſary here. *Green Tea* drunk ſtrong, and twice a Day, in a moderate Quantity, *viz.* three Diſhes in a Morning, and two or three in an Afternoon, with double refined Sugar, ſtimulates the Veſſels, reſolves the Humours, increaſes the Blood's Motion, Perſpiration and Secretion.

In Inappetency and Indigeſtion. In want of Appetite and Indigeſtion, from much Slime lining the Inſide of the Stomach, and palling it, or from a feeble and languid Action of its muſcular Coats, or from want of animal Juice to inflate and invigorate its Nerves, or from loading it with Food of hard Digeſtion, or from much oily Acrimony lodged in it, the dietetick Uſe of *Green Tea* is of the greateſt Service; for it thins and waſhes down the Slime out of the Stomach into the Inteſtines, and haſtens its Evacuation, and the reſt by Urine and Perſpiration; it gently and inſenſibly ſtimulates the Fibres, and by opening Obſtructions of the Brain, clearing its Paſſages, accelerating the Motion of the Fluids, promoting an increaſed Secretion of animal Spirits there, theſe inflate and invigorate the Nerves of the Stomach, raiſe up and remove the Sluggiſhneſs of the Action of its muſcular Coats: Then ſmall *Tea* looſens the Food of hard Digeſtion, and promotes the Separation and Attrition of its Parts. The *Tartars*, who feed much on raw Fleſh, are very ſenſible of this Effect; for if their Diet oppreſs the Stomach, they quickly run to *Tea*, and find their Relief in it, as it takes off their Faintneſs and ſtrengthens them. *Le Compte* tells us, *p.* 22. that the Infuſion of *Tea* will ſoften Fleſh, and make hard Meat tender [b], which if 'tis true, 'tis plain it promotes Digeſtion and the Diſſolution of the Food, as well by reſtoring the natural Fluidity of our Juices, as gently aſtringing the Tone of our Bowels and Veſſels by its fine ſaline Particles. And ſince many chronick Diſeaſes ariſe from a Diminution of Digeſtion in the firſt, ſecond and third digeſtive Powers, from how many Diſeaſes may we rationally expect Exemption, by a moderate and diſcreet Uſe of this Liquor?

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[a] *Riedlin. Lin. Medic. Ann.* 4ti 1698. gives us the Hiſtory of a Man aged forty Years, of a very thin and phthyſical Habit of Body, the Son of a conſumptive Father, who by plentiful Drinking of *Tea*, was reſtored to a more healthy and bulky Habit.

After *Crapula's*, or Surfeits of either Wine or Malt Liquors [c], which **In Surfeits.** have left much adheſive *Mucus*, or ſaline Particles in the Stomach, Bowels and Veſſels, or the Quantity of the Liquor drunk has diſtended the Veſſels beyond their Tone, or left its Salts fix'd in the Coats of the delicate Tubes, or loaded the Veſſels of the Brain, or ſecretory Ducts of the Skin with a tough Slime, which either ſtraitens or obſtructs them; hence Pain or Swimmings of the Head, Dulneſs, Heavineſs, Belchings and Oppreſſion of the Body, Fulneſs and Loathing of Food; in all theſe Diſorders, the good Effects of *Green Tea* is no leſs ſenſible than viſible; it waſhes off that palling oppreſſive Load of Slime from the Stomach, dilutes the whole Maſs of Blood, clears the Canals of the Brain, and milliary Ducts of the Skin, invigorates the flaccid Veſſels and Solids, and reſtores them to their proper and reſpective Uſes, ſoon lightens the Body of its Load, and procures the Evacuation of thoſe hurtful and ſuperfluous Juices.

In delicate and tender Stomachs, which either from the Thinneſs, or **A ſafe Vomit.** Abraſion of the *Tunica villoſa* by ſpirituous Liquors, or the exquiſite Senſibility of the nervous Coat, cannot bear rough, harſh or nauſeous Doſes, no Vomit is more ſafe and ſuitable; for it cleanſes the Stomach from its oppreſſive Load of Slime, and leaves a gentle Reſtringency behind it, which prevents After-Nauſeouſneſs, purſes up the Strainers, which were the Fountain of that Drain of irritating Juices, which made the Stomach quaſy, ſore, relaxed and belching.

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[b] *Novemb.* 18. I took half an Ounce of the muſcular Part of a Loin of Mutton cut ſmall, and divided into two equal Parts, and put them into two Phial Glaſſes; on the firſt I pour'd two Ounces of tepid *Green Tea*, on the ſecond two Ounces of tepid Water; when they had ſtood ſix Hours before the Fire, in a Heat equal to that of the Blood, and the Heat reflected on that Side furtheſt from the Fire, by a bright Fender, the firſt turn'd of a brown Colour, like ſtrong *Bohea Tea*, the ſecond was clear as before; and tho' it was hard Froſt all the while, yet on the fifth Day they were both exceeding fetid, tho' that with Water was moſt ſo, firm and of a pale Colour; that with *Green Tea* was next Day of a deep red Tincture, then of a pale brown; when both were pour'd out, the Fleſh in the *Tea* had loſt forty Grains, that in Water thirty ſix. But the Colour of the Liquor on the firſt, plainly ſhew'd that this Diminution of Weight was from the Dilution and Extraction of the Fluids contained in the Meat, and not from the Diſſolution of its Subſtance or Solids.

[c] 'Tis alſo the Cuſtom with ſome to drink *Tea* before they go to the Tavern, to prevent Drunkenneſs. See *Nat. Hiſt.* of *Coffee*, *Tea*, and *Chocolate*, p. 10.

Good in flatulent Cholicks.

In flatulent Cholicks, occaſioned by a Laxneſs, a languid or diminiſhed periſtaltick Motion of the Guts, whereby ſome of the more groſs and tenacious Parts of the perſpirable Matter lies in the Bowels rarified, diſtends their Coats, turns ſharp and pricks the Guts, *Green Tea* dilutes and prepares it for entering the Body, or paſſing along the inteſtinal Canal, to be expelled by an Exploſion; and at the ſame Time gently and pleaſantly ſtimulates, and corrugates the Fibres, invigorates their decayed Tone by its Bitterneſs and Aſtringency, whereby they are capable to act with greater Force on the Contents, and drive them forward to their reſpective Outlets.

In bilious Cholicks.

In bilious Cholicks (which are often the moſt tedious, painful, and dangerous of all others) very ſmall *Green Tea* thins the Bile, (but Chicken Broth in the Fit is infinitely preferable) carries it down, and delivers the Body from the Rack for the preſent, and by its Salts ſcours the Glands and excretory Ducts of the Liver from that Heap of Bile which lodges in them, and at the ſame Time, by its Roughneſs and Reſtringency, whereby it draws up the Fibres, and gives them a better Tenſion, it contracts and ſhortens the Diameters of the dilated biliary Strainers, and ſo diminiſhes a too copious Secretion of Bile.

In nephritick Cholicks.

And hyſterick Cholicks.

In nephritick Pains, from Stone, Gravel, or a mucillaginous Collection of Matter, I ſhall explain its Uſefulneſs afterwards. —— Its Friendlineſs to the Nerves, which I have already accounted for, makes it advantagious in Hyſterick Cholicks.

In Obſtructions of the Bowels.

In Obſtructions of the Liver, Spleen, Pancreas, and others of the abdominal *Viſcera*, *Green Tea* is moſt valuable; for the warm Water, wherein it is infuſed, thinning the Blood, and reſolving the cloſe impacted, and compreſſed obſtructing Matter, its Salts and pungent Particles will ſeparate and diſſolve thoſe Coheſions, whether mucous, purulent, ſteatomatous or viſcid Serum, open and clean the Veſſels, increaſe or recover their weakened Tone, lay open their narrowed or obſtructed Tubes, to the freſh and duly mixed circulating Fluid, to which the Salts of the *Tea* have added a greater *Momentum*. For in thoſe Obſtructions the Veſſels are ſtraitned or ſhut up, ſo as to reſiſt the Fluids, and prevent their free Paſſage along them, or totally oppoſe their Entrance. — This Narrowneſs of the Veſſels ariſes either from an increaſed Contraction by whatever adds to their elaſtick Force, ſo as they will not give way to the Power of the Fluids, or from a Diſtention of the lateral Veſſels, which conſtitute the Sides of the largeſt ones; the more diſtended the

Cauſes of Obſtructions explain'd.

firſt are, the more Space they take up and thicken the laſt, ſo as to ſhorten the Diameters of their Cavity. But Obſtructions may and do often happen in healthy Veſſels, either from too great a Viſcidity or Fluidity of the Juices. Any thing renders the Fluids too viſcid, and incapable of Circulation, which either changes their globular Figure into another, as it happens when the equal Preſſure of the ſmalleſt Particles, which formerly acted and preſs'd equally together from all Sides, ceaſes; and this is the Caſe when the Motion is languid, or the Veſſels relaxed, or the Quantity of the Fluid diminiſhed. The Juices alſo become viſcid, when the Attraction of any of their Principles becomes too ſtrong, ſo as ſeveral Particles run into one, which comes to paſs by too much Reſt, whereby the Fibres become inactive, reſty and relaxed; or by intenſe cold, which thickens the Blood, *&c.* Too great a Fluidity of the Blood generates Obſtructions, becauſe its globular Parts are very much divided into leſſer Particles, which find eaſy Admiſſion into the dilated Mouths of the ſmall Veſſels, but preſently ſtick, and can neither reach nor paſs the extream Part. Now theſe ſmall Veſſels are looſened, either by too great a Fulneſs, whereby their Reſiſtance is diminiſhed, or by an increaſed Motion, which throws a greater Load upon them than uſual, or a Rarifaction of the Fluids, whereby their Particles being ſeparated, they are diſpoſed to enter a narrower Canal, or from a Relaxation of the Veſſels themſelves. — Now that *Green Tea* is ſerviceable in either a Viſcidity of the Juices, or a Relaxation of the Solids, I have ſhewed already: But that it is alſo beneficial in Obſtructions from too great a Fluidity of the Juices, remaineth to be prov'd. The Blood's Quantity being firſt diminiſhed, this Liquor being drunk very ſmall and warm, dilutes the groſſer Globules of the rarified Blood, which had miſtaken their Paſſage, and ſtopp'd after they had enter'd the dilated Mouths of the ſmall Veſſels; it increaſes their Motion thro' the Veſſels, and the Action and Power of the Veſſels over their contained Fluids, by its ſtimulating and aſtringing the Fibres. It is no leſs advantageous where ſeveral ſmall Particles have run into one, and increaſed the Blood's Thickneſs, as in Colds, Idleneſs, or too great Heat, which diſſipates the more fluid Parts of the Juices, and leaves the thicker and more dry behind; for its fine Salts ſtimulate the Veſſels, its Roughneſs ſtrengthens them, and both increaſe their Action, and cauſe an alternative Motion in them: And what appears ſomething like a Paradox, 'tis alſo beneficial in too elaſtick or ſtiff Solids, becauſe 'tis evident that the Cure of ſuch a Veſſel or Fibre indicates the plentiful Uſe of aqueous and tepid Drink, its Warmth ſoftens, looſens and relaxes the Veſſels, which makes way for the *Impetus* of the Fluids; the Liquor drunk increaſes the Blood's Quantity

tity and its Reſiſtance to the Solids, the Thinneſs of it enables the lymphatick Juices, wherewith 'tis mix'd, to paſs and flow thro' the ſmalleſt pervious Veſſels. But here it muſt be drunk freely, and very ſmall; for if ſtrong, its Roughneſs pricks the Veſſels, and increaſes their Contractions, which is the chief Thing we have to guard againſt here; and therefore much Exerciſe and much Watching muſt be avoided. Thus I have accounted for the Uſefulneſs of *Green Tea* in Obſtructions of the Blood Veſſels, which may produce Inflammations; and alſo in the obſtructed and dilated lymphatick Arteries, which are follow'd by Corpulency, *Leucophlegmatia's*, and a Cachexy; and in the Glands phlegmatick Swellings, and in the ſmalleſt lymphatick Pains, without any viſible Tumor. But *Tea* in the firſt Caſe muſt be drunk plentifully, and exceeding weak, in the other two, very ſtrong and in ſmall Quantities.

Good in the Hippo.

When the more thin and moveable Parts of the Blood are diſſipated, and the groſs and leſs moveable remain united, whereby it becomes thick, earthy, fat and black, or is the *atra bilis* of the Ancients; hinders and confounds Circulation, the ſeveral Secretions and Excretions, eſpecially in the Spleen, Liver, Meſentery, Inteſtines and Pancreas, and all the other *Viſcera* of the lower Belly, as is the Caſe of all hypochondriack Perſons; then the Infuſion of *Green Tea*, being thin and light, will dilute and reſolve the thick, oily Parts of the Blood, ſoften or dilute its Acrimony, looſen the Veſſels, and expel with a gentle *Stimulus:* The Matter lodged in the obſtructed Bowels will become moveable, and may with Safety be gently driven out. But then it muſt be drunk in a Morning and Afternoon only, that it may not prevent Sleep, which is a chief Thing wanting here, and therefore muſt often be procured by a Paragorick Draught at Night [d].

In the Stone.

In the Stone, which is a Collection of ſome earthy Parts of the Blood, and a little groſs Salt cemented with a very ropy Mucillage, at the Ends of the ſmalleſt renal Arteries, in Shape of red Sand, and there gradually increaſe by the Acceſſion, Accumulation and Adheſion of other earthy Parts from the Blood, in the ſtrained off Urine, till it ſtop up the Duct, and increaſing yet further, it compreſſes the reſt, deſtroys the Uſe of the Kidneys, and compreſſes it, here a liquid, ſoft, thin and ſaline Diet of watry Drink, which may keep up the Circulation, dilute the Blood, lubricate, relax and expand the Veſſels, and gently determine the Courſe of the Blood to the Kidneys, where ſo much Liquor may be ſtrained off, as may waſh out, and carry off theſe beginning earthy Concretions, and clear the Parts from this foreign and miſchievous Lodgment, and drive it down into the Ureters and Bladder, ſo as to be diſcharged by Urine. Now *Green Tea* drunk plentifully twice a Day, but not too ſtrong, anſwers all theſe valuable Intentions. We may find Abundance of Examples hereof among our ſelves, beſides the Exemption of the Eaſtern Countries from the Agonies of this Diſeaſe by their free Uſe of this Liquor.

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[d] *Riedlinus* in his *Lin. Medic. Ann.* 3. 1698. tells us of a Woman in a deplorable hippocondriack Diſorder, who, after an unprofitable and tedious Courſe of all other Kinds of Medicines, was cured by drinking *Tea*; and how common is it to ſee languid Perſons exhilerated by their Afternoon Regale of Tea?

A good Cordial.

As *Tea* cleanſes and ſtrengthens the Veſſels, reſtores the natural Conſiſtence of their contained Fluids, and preſerves or reſtores a due Circulation, wherein all the Fluids are made to paſs their reſpective Strainers, it is therefore a good Cordial, chears the Heart, revives and increaſes the Spirits, makes the Body light and lively, diſpels thoſe Clouds and that Drowſineſs which hang over a lax Fibre, a languid Circulation, and loaded Veſſels of the Brain, whereby the animal Spirits, being either not ſeparated, or ſhut up in their Cell, and not propelled by the lively Pulſations of the Arteries upon the ſmall Nerves, the Muſcles flag and fall back, are lazy and inactive.

An Antidote againſt the Effects of chronick Fear.

For the ſame Reaſon *Green Tea* is an Antidote againſt chronick Fear or Grief, wherein the Solids relax, and the Blood's Motion becomes languid, being ill prepared, and unfit to paſs the Strainers, or afford due Nouriſhment. But to paſs from theſe Diſeaſes, chiefly confined to the Contents of the three Ventricles, let us take a Specimen of others, which affect the Body more univerſally.

In Dropſies.

When the watry Parts of the Blood return not to, nor paſs through the Veins, but ſtagnate in the extended Veſſels, or ſhut up thoſe which return the *Lympha* plentifully from the Cavities, and the Liquids already depoſited in them are neither exhaled nor reſorbed by the Veins, then are the Veſſels either diſtended or broken. If in the firſt Caſe this *Lympha* ſtagnates, and is depoſited over the whole Habit of the Body, it's called an *Anaſarca*, *Upoſarca*, or *Leucophlegmatia*; but if this viſcid *Serum* be collected in any one particular Place, it has a reſpective Denomination: If in the Head, it is called *Hydrocephale*; if in the Forepart of the Neck, *Bronchocele*; in the Breaſt, *Empyema*; in the Belly, an *Aſcites* or *Tympanites*, &c. Here *Green Tea* drunk ſtrong and ſparingly, (if no Veſſels are broke and diſcharge their Liquor into ſome Cavity) revives the vital Strength, promotes the Circulation of the ſtagnant *Lympha*, quenches Thirſt, forces Urine, thins and attenuates the Blood, ſtimulates, invigorates and ſcours the Veſſels, increaſes Perſpiration, Circulation and Secretion, moves the collected *Serum*, caſts it back into the larger Veſſels to be mix'd with the reſt, and expelled at its proper Outlets.

lets. But if the Veſſels be broke, *Tea* does more Miſchief than Good.

In the Gout.

In the Gout, whoſe immediate Cauſe is a Vitiation of the nervous Veſſels of the Body, and of the Liquor which they contain, and wherewith they are nouriſhed; for the Solids are contracted, become narrow, ſtiff and corrugated, and the Fluids are ſharp and ſizy, therefore the extream Parts ſuffer moſt here; for the Motion of the Fluids being ſloweſt in them, they reſiſt it the moſt, from the Contraction, Solidity, and Narrowneſs of the Veſſels, and the Exerciſe and Weight of the pricking, thick, ſizy Liquor laid upon thoſe Parts, through which it flows with moſt Difficulty; ſuch are the *Perioſteum*, the Nerves and Membranes of the Parts at greateſt Diſtance from the Heart. This Reſiſtance of the Motion of the Fluids, diminiſhes the Velocity of their Courſe, and the Evacuation of their ſuperfluous and noxious Particles: Hence they become ſtill more defective by their Acrimony and Viſcidity, preſs upon, diſtend, and pinch the Parts more, till the Violence of the Pain brings down a greater Afflux of Humours upon the pained Parts, which blunt the former, widen the Veſſels, promote Perſpiration thro' the Interſtices of their Coats, and cauſe a Swelling. Here *Green Tea* thins and ſweetens the Blood, prepares its corrupted Parts for Evacuation, prevents their Stagnation in the narrow Cells of the aſſigned Places, reſtores the decayed Vigour of the Veſſels, ſhortens the Fit, and by a temperate Uſe of the Non-naturals prevent its Return. The *Chineſe* and *Japaneſe*, who drink this Liquor much, are Strangers to the racking Pains of the Gout, Stone, and Rheumatiſm, which ſo frequently attack us *Europeans*, tho' the mountainous Parts of *Japan* are much colder than our Climate.

In the Scurvy.

In the Scurvy[c], whoſe Cauſe is a peccant Conſtitution of the Blood, it being too thick in one Part, and too thin, ſharp or ſalt in another, as is demonſtrable from the Nature, and all the Symptoms and Effects of the Diſeaſe. And that *Green Tea* is an excellent Thinner of the Blood, has been ſufficiently proved before; and that this Sharpneſs of the Blood is either acid, alkaline or oily, is undeniable; and that all theſe different Sharpneſſes of the Blood, are either the Effects of a bad Digeſtion in the Body, or of irregular Living, or of unſuitable Food, I have fully proved in a former Diſcourſe. But whatever is the Cauſe of this Diſtemper, Experience aſſures us, that ſtrong Evacuations never fail to exaſperate its

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[c] *Tea* could be no great Friend to a ſcorbutick Body, if *Waldſachmid*'s Account of it held true; for he ſays, *Tea* mix'd with Milk hinders its curdling, caſt what Acid ſoever you pleaſe into it. *Diſput. Medic.* 8^vo^. To try this, I put three Spoonfuls of *Tea* to four Spoonfuls of new Milk, and added a Spoonful of Vinegar, the Milk inſtantly coagulated, and threw up a hard Curd at Top, leaving a fine clear Liquor below it.

Symptoms, and ſometimes make it wholly incurable: Whereas, when we attempt the thinning the groſs Humours, reſtoring Motion to the ſtagnant, ſeparating the Coheſions, ſoftening and blunting the ſaline, and rendring the too thin more compact, we are in a fair Way to ſucceed. Now a Diet of *Green Tea* is a great Softener and Thinner of a thick Blood, as is evident from the Quantity of Water wherein it is infuſed; and that its fine attenuating, gently pungent Salts, do inſenſibly prick the tender Fibres, and invigorate their Action, is plain from its raiſing the Pulſe: Thus the Solids act with greater Force over the ſtagnant Juices, (which at the ſame Time the Additions of the aqueous Particles of the Blood has ſoftned) hereby they are moved, ſhaken, propell'd, and caſt into the larger Channels, where they are mix'd with the circulating Maſs, ground down, and in due Time expelled together with the other excrementitious Juices; and of whatſoever kind the reigning Acrimony of the Blood is, the thinning of the Blood diſſolves the large Combinations of its ſaline or oily Parts, fits them for Circulation, Secretion and Evacuation, provided the Patient can keep to this Diet.

In intermitting Fevers.

In intermitting Fevers[f], which acknowledge for their Cauſe a *Lentor* or Sizyneſs of the Blood, together with a lax Fibre and Veſſel, a Diet

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[f] *De* Blegny *in Febrium Medela efficaciam inſigniter deprædicat*, *quibus* Lewenhockii *Febrem pariter* Theæ *potu profligantis Obſervationem* (Van de Eyerſtock, *p.* 17.) *confirmat.* Acta Erudit. Vol. 7. *p.* 49.

Dan. Crugerus, *in Miſcel. Curioſ. Dec.* 2. *Ann.* 4^{ti}. *p.* 141. is dubious, whether an exceſſive Uſe of *Tea*, as it palls the Stomach and Digeſtion, may not be a frequent Cauſe of tertian Fevers, ſaying, *Quæſtio hic movetur, utrum ex potu Herbæ* Theæ *Febris hæc orta? Putabant enim quidam, Ventriculi Tonum nimis eſſe laxatum, acidum Ventriculi nimis propter Copiam Aquæ dilutum, unde Coctio non rite in Ventriculo hoc pituoſo peracta, cruditatis prognata & Febris conciliata*; *quam litem dirimere nolui*; *ſed hoc dixi, Certum jam eſſe potum* Theæ *febrem præcavere non potuiſſe, etiamſi effectum debitum præſtiterit.* —— *Neque ulli Auctor ero, ut potu* Theæ *largiori quotidiano indulgeat, qui Ventriculum habet pituoſum, debilem, calidum innatum, debile.* And certainly thus far he is in the right, (whatever he means by his *callidum innatum*, a mere Sound, without any determinate Meaning as far as I know) that Perſons of a lax, phlegmatick, and weak Habit of Body, cannot bear an exceſſive Uſe of weak, watry, tepid Liquors; but this is no Argument why a moderate Uſe of pretty ſtrong *Green Tea*, and Exerciſe after it, may not be very ſerviceable to ſuch Conſtitutions, ſince we find it an agreeable Aſtringent and Bitter; but we are ſatisfy'd that whatever has a diuretick Force in it, whereby it may leſſen the too great, or growing Quantity of Seroſity, and ſtimulate and invigorate the Veſſels and Solids, dilute a Sizy, and reſtore a Texture to an attenuated Blood, muſt be ſerviceable in ſuch a Habit; but *Green Tea* is poſſeſſed of all theſe Properties in a ſenſible Manner, and therefore how its moderate Uſe, and due Strength, ſhould be hurtful here, is to me a Paradox. And as to its occaſioning intermitting Fevers, I will not anſwer for its Exceſs; but take we *England* over, and we ſhall find that this Diſtemper attacks ten Ale Drinkers, for one that contents of *Green Tea* is no leſs pleaſant than uſeful, being a Thinner of a viſcid Fluid, a Stimulator of a weak and diſtended Veſſel, and to nice and delicate Palates may be a very good *Succedaneum* to Wormwood and Camomile Flower Infuſion, which are the beſt known Specificks our Climate affords againſt this Illneſs.

In a thick, moiſt, foggy Air.

In thick, cloudy, moiſt, foggy Weather, or in low, fenny or watry Countries, *Green Tea*, drunk pretty ſtrong, is of great Service; for by its Roughneſs and Stimulancy it draws up and encreaſes the elaſtick Power of the Fibres, which moſtly in ſuch Times and Places are relaxed, partly from the Diminution of the Elaſticity of the Air mix'd with the Blood, which is in *Æquilibrio* with the external Air, or Atmoſphere, whoſe Spring being broke, it takes up a larger Space in the Veſſels; partly from the Diſtention of the Veſſels with a larger Stock of Juices, accumulated in the Body from the Decreaſe of Perſpiration, and other Evacuations. This *Plethora* giving too great a Reſiſtance to the Veſſels, they act with leſs Force; the Circulation in the ſmall Veſſels is ſlower, the due Mixture of the Blood by a regular Motion is prevented, it firſt turns thinner, then its more fluid Parts being drained off, the remaining muſt be thick and ſizy. Hence Obſtructions, Fevers continual and intermitting, Pleuriſies, Squinzies, Rheumatick, Scorbutick or Cachectick Illneſſes, &c. But here *Green Tea* by its watry Parts attenuates the Blood, by its Roughneſs increaſes the Tenſion of the Veſſels, and by its Bitterneſs reſtores Perſpiration, and eaſes Nature of ſome of the obſtructing Matter, which lies in the cuticular Strainers, and their ſecretory Ducts, and at the ſame Time, it ſtimulates the Kidneys and cauſes a more copious Secretion of Urine. The ſame Reaſons will recommend the Uſe of *Tea* in very warm Weather, when the Blood is rarified, the Veſſels relaxed, and the ſecretory Ducts of the Skin are ſhut up by a viſcid *Mucus*, which the weakened Veſſels cannot propel without the Help of the cold Bath, and is therefore not an infrequent Cauſe of inflammatory Fevers, Pleuriſies, Peripneumonies, &c.

In Epidemick and Endemick Diſeaſes.

Infectious Diſeaſes are either Endemick, wherein the ſame Diſeaſe affects many People from ſome peculiar Cauſe of the Countrey or Seaſon, or Epidemick, which may over-run ſeveral Kingdoms at the ſame Time[g]. The

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himſelf with a moderate Diſh of *Tea*. And paſs we next to what the Ancients called putrid Fevers, wherein there is a ſmall, ſlow, uncertain Pulſe, clear Urine, &c. from a general Relaxation of the nervous Syſtem, and a great Viſcidity of the animal Juices; I believe that diluting the Blood with ſmall *Green Tea*, ſometimes for ordinary Drink, before gentle Cathartick, and ſtrong Epiſpaſticks, might be more conſonant with Theory, than the warm Regimen.

[g] The ſaline *Effluvia* ſent off from infected Bodies, mixing with, and hanging in

The firſt is often occaſioned by ſome Alteration of the Seaſon or Air, herein the Humours are either too ſluggiſh and viſcid, or too rapid and rarified in both Caſes; they load the Veſſels, eſpecially the Capillaries, and diſtend them beyond their natural Tone, whereby their Reſiſtance is weakned, and their contained Juices become firſt too watry, and then too ſizy; and hence ſlow Fevers. Now whatever keeps up the Vigour of the Fibres and Veſſels, preſerves their Reſiſtance in *Æquilibrio* with that of the Fluids, ſo as there is neither Accumulation nor Stagnation of them in the Veſſels; and this a daily Diet of *Green Tea* offers very fair for, being both a Thinner of the Blood, and a gentle, yet powerful Rouzer of a ſluggiſh Fibre. —— As a pannick Fear often ſtrikes the Minds of Men in Time of raging Epidemick Illneſſes, which diſpoſes their Bodies for Infection; ſo whatever prevents in a greater or leſſer Degree the Effects of this Dread and Terror, muſt be of Benefit to the Body: But that *Tea* is ſerviceable in any chronick Fear, I have already ſhewn, and ſhall therefore ſpare a Repetition here.

More ſuitable to Women than Men.

Tea, if moderately drunk, and of a due Strength, is generally more ſerviceable to the fair Sex than to Men. Becauſe Nature having framed them with a more lax and delicate Fibre, they are more liable to a *Plethora*, or Fulneſs of Juices; as alſo becauſe they are more exempted from Exerciſe and hard Labour, than which nothing braces and gives the Fibres a greater Elaſticity; and becauſe they are leſs accuſtomed to drinking of Wine; whoſe Aſtringency corrugates the Fibres, and enables the Veſſel to act with greater Briskneſs and Force, and ſo anſwers the ſame as moderate Labour.

Good in very hot Weather.

As to the Seaſons of the Year, theſe are very little regarded in Reſpect of Diet, when it can conveniently be come at; but the hot Weather in Summer, the foggy, cloudy and moiſt Weather in Winter, and after the Autumnal Equinox, being Times wherein our Juices are moſt liable to a *Lentor*, and our Bodies to an Abundance of Humours, from a relaxed State of the Solids, ſeem fitteſt for the Uſe of *Green Tea*, to keep our Juices thin, and our Fibres braced, that Circulation, Digeſtion, Secretion and Evacuations may be regularly and duly performed.

In what Stages of Life 'tis beſt.

As to the Stages of Life, Manhood being the Noon-day of our Age, Accretion being then finiſhed, our Veſſels and Bodies at their full Growth, and in their greateſt Vigour and Force, whereby the Digeſtions and Secretions

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in the Air, being received into the Bodies of the healthy, both in their Breath and Meat and Drink, taint the Blood, and produce the like Illneſs in them, except their Bodies are very ſtrong, healthy and vigorous, ſo as they perform all the Actions of Nature with Eaſe, Pleaſure, and in due Time. How ſound, healthful Perſons are infected hereby, *Boerhave* and *Quincy* have explained at large.

cretions are beſt performed, ſeems to want Diluters and Stimulators leaſt; therefore Childhood, Youth, and the Decline of Life, require theſe Things moſt; becauſe in the two firſt Caſes we are the moſt expoſed to *Plethora's*, from the Proviſion Nature makes for our Growth, Nouriſhment and Evacuations; in the laſt, Circulation and Digeſtion are weaker, the Secretions groſſer, and Evacuations begin to leſſen, all which expoſe the Body to more groſs and phlegmatick Humours; but old Age requires a warmer Liquor than *Tea*, viz. *Lac Senum*, or a Glaſs of generous Claret to revive and glad the Heart.

To what Conſtitutions moſt uſeful

The Conſtitutions to which it ſeems peculiarly adapted, are the Phlegmatick and Melancholy, becauſe the Blood of the firſt is moſtly liable to *Lentors* from the natural Laxneſs of their Fibres, and that of the laſt, to an earthy Thickneſs and Groſſneſs, from the Strength, Firmneſs, and Stiffneſs of their Solids, which ſlowly but powerfully ſtrains off the thinner Parts of the Blood, ſo as it often wants a Diluter; and a greater Relaxer we know not of than warm Water.

Its Strength and Quantity adapted to ſundry Conſtitutions.

As to the Strength and Quantity that ſhould be drunk, all phlegmatick, corpulent, cachectick, dropſical People, with all thoſe who have lax *Stamina*, whether hereditary or acquired, ſhould drink it in ſmall Quantity, not above two or three Diſhes at moſt, and very ſtrong, *viz.* about two *Tea* Spoonfulls of *Tea*, for three ſmall Cups of its Infuſion. Sanguine Perſons ſhould drink it weaker, but not in too large Quantities, ſince they are liable to a *Plethora*, which expoſes them to inflammatory Diſeaſes; tho' they are in leaſt Danger from this of any thing they drink, three or four Diſhes is a ſuitable Doſe for them. Melancholy Temperaments may uſe it of a moderate Strength, and with more Freedom, *viz.* to four or five Diſhes, ſeeing their Wire Fibres have ſuch Force in grinding down and expelling the finer Parts of their Juices, ſo as their Blood is always black, thick and oily. Bilious People are to expect the leaſt Profit from it of all others. I ſee nothing but Company and Faſhion that can prevail with them to turn it to a daily Diet, ſeeing their Fibres are too elaſtick, their Blood too ſharp, and their Perſpiration too large; they eſpecially ſhould uſe Milk or Cream in a good Quantity, not forgetting Bread and Butter; *Tea* Drinking once a Day is ſufficient for healthy temperate People, *viz.* in the Morning: But ſuch, whoſe Quality, Buſineſs or Company often calls them to a generous Evening Glaſs, or a luxurious Diet, ſhould waſh the Stomach in the Afternoon, both to help Digeſtion, dilute the Chyle, and ſtrengthen the Bowels.

The ill Effects of *Tea*.

Thus far of the good Effects of *Tea*, from which one would be apt to imagine it could do no Miſchief. But daily Obſervation may ſatisfy us of the contrary: However I ſhall but briefly name a few, and conclude this Diſcourſe, having already run out beyond my firſt Deſign.

It cauſes *Tremors* in them that have very ſenſible and elaſtick Nerves.

Such as have very ſenſible and elaſtick Nerves, when they have drunk ſeveral Diſhes of *Green Tea*, but eſpecially of *Bohea*, are ſeized with a *Tremor*, or ſhaking, which is a wavering of their Nerves betwixt their Tone and Laxity, being now contracted, and then relaxed; which Motions immediately ſucceeding one another, againſt the Perſon's Will, are the true Cauſe of that Trembling, obſerved in ſeveral after drinking of *Tea*; for its Roughneſs and Reſtringency affecting the Fibres, and cauſing them to contract, the continual and regular Influx of the nervous and arterial Juices is ſtopt, being ſometimes abſent and ſometimes preſent; for when the Fibres are ſuddenly drawn up, the Reſiſtance of the Sum of all their Ramifications is ſuperior to the Heart's Force, or the Brains Propulſion of its nervous Juice; and while this Reſiſtance is ſuperior, the Influx is ſtopp'd, but upon the Remiſſion of this ſudden Contraction, the Fibres relax again, and the Tubes are filled, till the next Twitch gives them a Check again. In this Caſe, the frequent Uſe of *Green Tea*, eſpecially if drunk ſtrong, muſt occaſion Impediments in the Circulation of Humours, and produce ſundry Defects. But *Bohea Tea*, containing more narcotick Salts, as well as ſome aſtringent Oil and Earth, throws the Veſſels into thoſe convulſive Vibrations, betwixt the relaxing Power of the firſt, and the contracting Force of the laſt.

Bad in ſharp Diſtillations.

In ſharp ſerous Diſtillations upon the Wind-pipe or Lungs, cauſing frequent, laborious, tickling Coughs, or in convulſive Coughs, the Uſe of *Green Tea* is imprudent; for tho' it dilutes the ſharp Humours, yet it pricks the Fibres, whereby they are irritated and contracted, the Veſſels are made narrower, and more ſenſible of the Acrimony of the Blood, and hence the Cough is exaſperated.

In Obſtructions of the Lungs from a Viſcidity of the Juices.

In all Coughs, Aſthma's, and Obſtructions of the Lungs, from a Viſcidity of the Juices, becauſe of the Blood's *Lentor*, and the Weakneſs and Laxneſs of the Fibres, the Uſe of *Bohea Tea* is very culpable; ſeeing its Property is to lubricate, ſoften and ſmooth the Fibres with its oily and balſamick Parts; but this Caſe calls for Detergents, Attenuators, and Stimulators, which are the Properties of *Green Tea*.

In dropſical and cachectick Habits.

In cachectick, dropſical, and phlegmatick Caſes, *Bohea Tea* may add to the Diſtempers, but can bring no Advantage to the Drinkers, who want a Liquor to invigorate their Solids, cleanſe and rouze their Veſſels, attenuate and diminiſh their Fluids by Secretion and Evacuation.

In Obſtructions of the Liver, &c.

In Obſtructions of the Liver, Spleen, Pancreas, or other Bowels, *Bohea Tea* is not to be allowed for Reaſons juſt now given.

The

Upon Recovery from long Fevers.

The Uſe of *Green Tea* is no leſs unadviſeable upon Recovery from long and continued Fevers, which have waſted the Body, and ſhatter'd the Conſtitution; for here a reſtorative nouriſhing and balſamick Diet is indicated, and not Detergents, which, where they have no *Mucus* to cover them, diminiſh and wear the Veſſels, which the Fever had worn out before.

In too great a Senſibility of the Stomach.

Where the Stomach is very weak, ſenſible and delicate, either from a conſtant Drain of Humours, which, by their lying in the ſecretory Ducts, are become ſharp, and ſo prick the Stomach that its ſomewhat inflamed, or by the Abraſion of its mucous Coat, whereby its nervous Coat is expoſed to the Touch of its Contents; or from the over Delicacy and Senſibility of the Nerves, and their Turgeſcence with nervous Juice, the Uſe of *Green Tea* is hurtful; for by its Roughneſs, it ſtimulates the nervous Coat, and cauſes the Stomach to contract and throw up its Contents.

It cauſes Cholicks.

In ſome fine Conſtitutions, where either the mucous Coat of the Bowels is very thin, or the Ramifaction of the Nerves very many, large, or exceeding ſenſible, *Green Tea*, eſpecially if drunk ſtrong, pricks the nervous Coats, and raiſes Cholick Pains and Gripes; but Inſtances of this kind, are rather owing to its being drunk too ſtrong, than to the ſimple and moderate Uſe of this Liquor.

Dry Gripes.

In the dry Gripes, a Diſeaſe endemick, and often fatal in hot Countries, *Green Tea*, being both ſtimulant and reſtringent, muſt be pernicious; ſince this Diſeaſe is only to be treated with tepid, relaxing, and lubricating Things, as Chicken Broth, Oil of ſweet Almonds, and Manna, or *Balſam Capivi*.

Bad to meagre hectick Bodies.

Neither is it adviſeable to meagre Bodies, and thin Conſtitutions [h], for in this Caſe the Solids are an over-balance for the Fluids, their Perſpiration is too large in Proportion to the Aliments they take in; therefore whatever thins the Blood more, and fits for a quicker Filtration through the cuticular Strainers; or whatever by a gentle Stimulation, or briſk Titulation, adds to the Force and Corrugation of the Fibres, muſt ſubſtract from the weak Reſiſtance of the Fluids: Now *Green Tea* does both in ſo high a Degree, that by an Indulgence of its frequent Uſe, its ſaline Parts muſt abrade and deſtroy the Subſtance of the Veſſels, as well as ſubtilize the Humours, and thereby cauſe an Atrophy.

To inactive and idle Perſons.

Thoſe who lead an idle and ſedentary Life ſhould either drink little *Tea*, or have it ſtrong, that it may, in ſome Degree, compenſate their want of Exerciſe, and preſerve the due Motion and Fluidity of their Blood, which in this Caſe becomes firſt watry, and then by Reſt, or exceeding ſlow Motion in the ſmall Veſſels, and the Percolation and Exhalation of its finer Parts, it turns ſizy, is apt to ſwell the Veſſels, and foul the Glands.

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[h] *Herm. Nic. Grimmius, Obſ.* 36. took notice in *India*, that the exceſſive Uſe of *Tea* threw ſeveral into an Atrophy and Diabetes.

To the more laborious.

But it's yet worſe to ſuch as work hard, or uſe much and ſtrong Exerciſe, becauſe both theſe raiſe the Tone of the Solids, and prepare and expel the Fluids rather in too great Plenty than otherwiſe; theſe therefore require a Liquor which elevates and nouriſhes at the ſame Time; whereas *Tea*, being diuretick and aſtringent, rather increaſes than diminiſhes their great Waſte.

Antonius de Heide, in *Holland*, obſerved, that the exceſſive Uſe of *Tea* had occaſioned a very intenſe Coldneſs in the Stomach, and whole Abdomen of ſeveral, ſo as to cauſe a Shivering. —— To all theſe I might add the common and pernicious Practice of drinking it daily with *Sal Volatile*, or Spirits of Hartſhorn, whereby the Drinkers are in Danger of overfuſing their Blood, inducing a Cachexy, and ſeveral obſtinate Diſorders. And to theſe may be applied what *Cruger* ſays, that *Tea* Drinkers are preſently diſcoverable by their pale Countenance, and faint diſcolour'd Looks. — The Practice of ſome is ſtill more ridiculous and ſurprizing, who firſt drink *Tea* to waſh their Stomachs, promote Digeſtion and thin the Blood, and then drink Wine, Drams, or volatile Spirits, to raiſe their Spirits, or prevent their flagging with *Tea*. But I cannot ſee the Force of Reaſon to juſtify either of thoſe Practices.

AN APPENDIX

CONTAINING A

DISSERTATION

ON

SAGE and WATER.

'TIS ſurprizing to ſee ſo many *Europeans* employed in a warm Enquiry into the Nature and Properties of *Tea*, and yet wholly overlook a domeſtick Herb, no leſs common than uſeful; I mean *Sage*, for which the *Chineſe* formerly exchanged their *Tea*, admiring and preferring it as much to their own Shrub, as we do *that* to *Sage*; which thus ſupplanted itſelf in a manner, to make Room for our Acquaintance with the *Indian* Leaf. It muſt, doubtleſs, be allowed the only *Engliſh* Herb that has put in its Competition or Rivalſhip with this foreign Plant, and indeed ſeems preferable in ſeveral medical Intentions. *Orpheus*, *Veſlingius* and *Ætius*, teſtify from their own Experience, that three or four Spoonfuls of *Sage* Juice drunk (eſpecially with Honey) in a Morning, for ſeveral Days together, effectually ſtops a ſmall Vomiting, or ſpitting of Blood: And they who have a ſhaking or trembling of their Hands, find Relief by waſhing pretty often for ſeveral Days, in an Infuſion or Decoction of *Sage* in Wine: And what a pleaſant Draught does

Why *Sage* ought to be ſpoken of with *Tea*.

does its *Tea* make, mix'd with a little Lemon Juice in Fevers? And ſurely one would think in Inflammations, where Lubrication and Relaxation of the Veſſels, and Attenuation of the Blood is indicated, we ſhould prefer *Sage* to *Tea*, being leſs aſtringent, and better ſtored with volatile Particles. Beſides, it's the Product of the ſame Earth, nouriſh'd in the ſame Climate, and expoſed to the ſame Viciſſitudes of Seaſons with our ſelves: And if theſe Conſiderations could not counterballance our Prejudice from the Commonneſs of it; yet they ſhould ſo far recommend it, as to excite our Endeavours to reſtore and maintain its former Character Abroad, that we might at leaſt continue the old Trade of bartering it for their Leaf.

Etymology of *Sage*.

Sage is called *Salvia a ſalvando, quia reddit homines incolumes & ſanos.* *Agrippa* calls it *Herba ſacra*, from the great Eſteem the Ancients had for it. The *Greeks* call *Pig-Sage* Ἐλελίσφακος, becauſe of the Aſh-colour'd, dry and ſcorched Deformity of its Leaves, for it naturally grows on dry parched Hills in hot Countries, ἐλελιζεῖν ſignifying to roll up and contract, and σφάκος blaſting: But *Pena* thinks it rather deſerves that Name, becauſe of its ſingular Virtue in reſtoring the pined and withered Members of Mens Bodies. Some call it *Cor ſalvium*, reputing it an univerſal Heart-eaſe. *Pig-Sage* is alſo called *Sage* Royal, Small *Sage*, and *Sage* of Virtue. Many Perſons breakfaſt on its Leaves with Bread and Butter in *May*, while they are young and tender; but when full grown, they gather and dry them for the Kitchen, or for *Tea*. The *Italians* admire this Herb ſo much, that they perſuade themſelves, if they eat *Sage* Leaves with a little Salt faſting, they are Proof againſt all Infection by poiſonous Creatures, or Epidemick Diſeaſes, and becauſe they believe it poſſeſs'd of ſo many and great Virtues, 'tis ſaid,

Cur moriatur Homo, cui Salvia creſcit in Horto?

The various Sorts of *Sage*.

Late Botaniſts [a] have multiply'd this Herb into thirty different Species, thirteen whereof grow in moſt or all Countries of *Europe*, ſix come from *Crete* or *Candy*, two from *Samos*, ſix from the *Eaſt-Indies*, and two are Natives of *Spain:* But three only are commonly uſed amongſt us, *viz.* Broad leaf'd white *Sage*, broad leaf'd red *Sage*, and *Pig-Sage*, or *Sage* Royal, whoſe Familiarity to every one will ſave me the Trouble of giving their Culture, Deſcription and Difference.

Microſcopical Obſervation on *Sage*.

Some curious Perſons having view'd *Sage* thro' a Microſcope, have obſerved its whole Surface cover'd with ſmall Filaments, like the moſt de-

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[a] *Tournefort*'s compleat Herbal, *p.* 2.

licate Spider's Webs, wherein are Multitudes of very minute *Animalcula*[b], which ſeem to creep about it.

Why *Sage* and Rue planted together.

The Conceit of Toads and other venemous Creatures ſheltering themſelves under its Leaves and Roots, tho' more fabulous than true, yet made the Ancients ſo careful, that they never eat it in Salads unwaſhed; for the ſame Reaſon the *Italians*, either plant Rue near their *Sage*, or put them down together in the ſame Bed; hence that Verſe,

Salvia cum Rutâ faciunt tibi Pocula tuta[c].

However, I think it but a neceſſary Care that it ſhould be waſh'd, becauſe its rough hairy Leaf is a very proper Receptacle of ſmall Inſects, and a good Neſt for their Eggs, which by Negligence taken into our Bodies may animate and hatch there.

A Story of its harbouring poiſonous Animals.

Ambroſe Parey[d] tells us a diſmal Story, (which probably ſtrengthened the ſuperſtitious Opinion of the Vulgar, coming from ſo good Authority) of two Merchants, near the City of *Tholouſe*, who walking in the Garden, till Dinner was ready, gathered ſome *Sage* Leaves, put them into their Wine unwaſh'd, and drank it; they were preſently after ſeiz'd with a *Vertigo*, loſt their Sight, fainted, vomited, were convulſed, their Tongues turn'd black, they had a terrifying Look, were all in a cold Sweat, their Bodies ſwell'd, and they died. The Innkeeper with his Family were hurried before the Magiſtrates and examined, but they truly and ſtrenuouſly denied any Acceſſion to, or Conſciouſneſs of the Poiſon, and ſaid they had all eaten of the ſame Meat, and drunk of the ſame Drink, except ſome Wine, into which theſe two had put unwaſh'd *Sage* Leaves: A Phyſician was call'd, and aſked whether *Sage* Leaves could poiſon? He deſir'd to ſee the *Sage*, and at the Root of it he ſpied a Hole in the Earth, into which he cauſed boiling Water to be poured, and a whole Neſt of Toads came crawling out[e].

I ſhall

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[b] Miſcell. Cur. Vol. 9. Obſ. 163.

[c] Schol. Salern. cap. 20.

[d] Lib. 21. c. 24.

[e] Granting the Truth of this Story, I ſhould ſtill be more ſuſpicious of the Miſchief from ſmall Spiders, or their Eggs on the Leaves, than Toads at the Root: For, 1. I ſuppoſe it univerſally granted, that the Poiſon of Animals is more or leſs dangerous, as the Climate is hotter or colder, and *France* enjoys a much warmer Climate than we. 2. Tho' the Air be more temperate, yet Spiders are not wholly harmleſs here; for I knew a Surgeon, who ſmoaking his Pipe in his own Room, a ſmall Spider lighted on his Hand and bit him, the Part preſently turned red, and ſwell'd; he then cut it out, but his Hand ſwell'd ſtill, and was exceeding painful, and in half an Hour a Fever ſucceeded. After he had applied a Cataplaſm, he went to Bed, and took an Alexipharmick Bolus, but the Hand continued to ſwell upwards; then he ſet the Arm on his Elbow, and

The Author's Reaſon for writing briefly on it.

I ſhall be very brief on this Subject, becauſe it is of a longer and more univerſal Acquaintance in *Europe* than *Tea*; and alſo becauſe *Franciſcus Paulinus* has already favour'd the World with a very uſeful and elaborate Treatiſe on *Sage:* (printed at *Noremberg*, 1688. in 8°.) He has divided it into four Sections, and each of theſe into ſundry Chapters: In the firſt Section he gives us its ſundry Names, Deſcriptions, Differences, Cultures, Qualities, Preparations and Uſes. In the ſecond, which he calls *Medico-chymica*, he lays open in three Parts, how it is ſerviceable in Diſeaſes of the three Ventricles of the Body, *viz.* of the Head, Breaſt, and Belly; and reduces his Preſcriptions of it to all Forms, as Infuſions, Decoctions, Electuaries, Bolus's, Pills, Powders and Draughts. In the third, he accounts for its great Virtues in Fevers, and external Diſorders, and plentifully ſupplies each Chapter and Section with various Forms of Preſcriptions, borrow'd from other Phyſicians, or built on proper Obſervations. He ſays, where *Sage* grows naturally in great Plenty, there Diſeaſes of the Head are moſt frequent; as tho' kind Nature had placed the Poiſon and its Antidote, the Diſeaſe and its Cure, next Door Neighbours. The laſt Section contains its Uſes in Cookery.

The Difference betwixt *Tea* and *Sage*.

Sage, no doubt, conſiſts of the ſame Principles as *Tea*, but their Modifications, Proportions and Bulks are very different; for 1. The ſmaller and looſer Parts of thorough dried and well kept *Sage*, ſeparable by a gentle Heat, in a quarter of an Hour's drying before a moderate Fire, are in a middle Proportion betwixt thoſe of *Green* and *Bohea Tea* [f]. 2. Its Salt and Oil are much more ſubtile and volatile [g], for in their

Extraction

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and ſtay'd up the Hand expanded to the Bed's Head, and lay in that Poſture all Night; the Tumor turn'd and went off at his Finger's Ends,; but he was confin'd to his Room three or four Days after. 3. Microſcopes diſcover many of theſe Inſects lodged in the *Sage* down.

[f] *Green Tea*, *Bohea* and *Sage*, all dried in the ſame Degree of Heat, and the ſame Space of Time, one Dram of the firſt loſt two Grains, a Dram of the ſecond ſix Grains, a Dram of the third four Grains.

[g] One Dram of broad leaf'd red *Sage*, infuſed three Weeks in two Ounces and a half of Spirits of Wine, (in a cold Room during the Froſt and Snow) the Spirits pour'd off, and the *Sage* dried, it had loſt twenty four Grains: The Tincture was of a beautiful green, and very thick; the Liquor evaporated before a ſmall Fire, at about two Feet Diſtance; I had ſix Grains of a very oily Extract, which flow'd before the Fire; here were eighteen Grains of volatile Oil and Salt loſt. The dried Leaves ſmell'd very little of *Sage*, and taſted only of the Spirits; on them I poured half a Pint of boiling Water, let it ſtand forty eight Hours in a warm Room, and then poured off the Liquor, which ſmell'd faintly of *Sage*, was of a deep brown Tincture, and wholly taſteleſs. I dried the Leaf, and it had loſt eleven Grains and a half more, *i. e.* it weighed twenty four Grains and a half; this Liquor exhaled, there remained ſix Grains of Salt and Earth, on which I poured warm Water, and filter'd it twice, then evaporated the Humidity, and three Grains

of

Extraction in Spirits of Wine, few or none of the Parts of *Green Tea* are loſt, or fly off in evaporating the Spirits, whereas near one third of *Sage* is loſt, 'tis ſo volatile. 3. The Oil of *Sage*, ſtored up in its *Cellulæ pinguiferæ*, exiſts in ſmaller Particles, is leſs attached and fixed to its Earth, and therefore as eaſily and fully extracted by an aqueous as ſpirituous Vehicle [h]. 4. *Sage* contains no Reſin, nor ſo much as a Gum conſtituted of *Mucus* and fix'd Oil [i]. 5. The Perſpiratory Ducts of *Sage* are

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of browniſh Salt remain'd. --- *Pig Sage* infuſed at the ſame Time with the other in Spirits, loſt thirty five Grains, its Extract weighed eight Grains; when the Spirits were poured off, its Leaves were criſp: This *Sage* infuſed in boiling Water, the ſame Quantity and Space of Time, then taken out and dried, weighed ſcarce twenty two Grains. Its Salt and Earth left in the Water were ſix Grains, the Salt two Grains. Thus we ſee the *Pig Sage* contains more fixt Parts than red *Sage*, yet it communicates more of its Particles to the Water; for one Dram of red *Sage* contains eighteen Grains of volatile Oil and Salt, that is, near one third Part; but a Dram of the other only yielded ſeventeen Grains, tho' it loſt a Grain more in the Infuſion than the other. And whereas red *Sage* loſt only eleven Grains and a half in Infuſion in boiling Water, *Pig Sage* loſt thirteen Grains. We ſee alſo that red *Sage* contains a third Part more fix'd Salt than the other: Hence its Colour ariſes from the greater Subtilty of its Parts, and Abundance of Salt.

[h] I took of broad leaf'd red and white *Sage*, and *Sage* royal, of each two Drams, put them into ſundry Tea Pots, pour'd boiling Water on them, and let them ſtand two Hours; then poured off the Liquor, and put on more boiling Water, and repeated it four or five Times, till they had ſtood twenty ſeven Hours; the red *Sage* taken out and dried, had loſt thirty five Grains in the Infuſion, the white forty eight Grains, *Sage* royal forty three. Then I took the Infuſions of each Sort, (for I kept them ſeparate) and boiled them over a ſlow Fire, till the Water was conſumed. From the Infuſion of the red *Sage*, I had four Grains of Salt, and about eighteen of Earth; the Infuſion of the white left nineteen Grains of Earth and Salt; tho' but about one and a half of the laſt. *Pig Sage* left nineteen Grains of Earth and Salt; when ſeparated, there remain'd two Grains and a half of Salt, ſo exceeding penetrating, that it was next to corroſive, but would not ferment with acid Spirits: After the Phlegm was exhaled from the Salt and Earth of theſe Infuſions, much Oil remained, which made the reſt exceeding tough, and almoſt inſeparable, and of a blue red Colour. --- I took theſe two hundred and twenty nine Grains of *Sage* Leaves, which had been infuſed and dried, and boil'd them in a Pint and quarter of Water, till three Parts were conſumed; then pour'd it off, and boiled the ſame Leaves again in as much freſh Water as before; this laſt had neither Colour, Taſte, nor Smell of *Sage*; then I took it out and dried it, and it had loſt forty Grains more; I ſet the Liquor of theſe Decoctions on the Fire, till the Phlegm and Oil were exhaled, and there remained nine Grains of Earth and Salt, three and a half of which was a reddiſh brown Salt.

[i] I took one Scruple (*i. e.* twenty Grains) of this *Sage*, which had been firſt infuſed; then boiled, and put into one Ounce of rectified Spirits, and ſet it forty eight Hours before the Fire; it was ſcarce greeniſh, but rather white and muddy; then I poured off the Spirits and exhaled them, and there remained three Grains of a yellow coarſe Duſt, or *Mucus*; the Leaves dried had loſt three Grains and a half;

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are larger, and give Exit to a more free and copious Perſpiration of its Parts. Hence, 1. *Tea* abounds more with a fix'd Oil than *Sage*; therefore

half; ſo that ten Times and a half three and a half, is about thirty ſix and a half, which taken from two hundred and twenty nine, one hundred and ninety two Grains and a half remain; which is all that remained of the three hundred and ſixty Grains firſt put to Infuſion. Now it is plain from this *Mucus*, that the Infuſion and Decoction had extracted all the Oil from the *Sage*, which enter'd not into the Conſtitution of its Fibres, *i. e.* all the Oil laid up in its pinguiferous Tubes or Bladders. This proves that *Sage* has no Reſin, nor indeed any ſuch fix'd Oil as conſtitutes a Gum. After Infuſion the Leaves ſmell'd ſtrong of *Sage*, but not after Decoction. --- I burnt theſe one hundred ninety two Grains and a half of *Sage* to white Aſhes, which weighed ten Grains, then pour'd warm Water on them, and evaporated the Water, a little white *Mucus* remained, but not a Grain of Salt; ſo that the Water had diſſolved, and extracted its ſaline Principles.

To try the Difference betwixt a hot and cold Infuſion of *Sage*, in Spirits, I put two Scruples of it into two Ounces of rectified Spirits, and ſet them before the Fire thirteen Days, then pour'd off the Liquor on a Saucer, and exhal'd it before the Fire, there remained ſix Grains and a half of a fetid oily Extract, the Leaf dried and weighed had loſt ten Grains. I infuſed this half Dram of the dried Leaves in half a Pint of boiling Water twenty four Hours; it tinctur'd it of a very deep brown Colour: The Leaf taken out and dried, and weighed again, had loſt eight Grains more. Thus we ſee that the *Sage*, which ſtood five Weeks in the cold Infuſion in Spirits, loſt more than in the hot. ---- Laſtly, To ſee the Effects of *Sage Tea* upon the Blood, I took three Saucers, and pour'd upon each of them two Ounces of Blood, to the firſt of which I put two Spoonfuls of *Pig Sage Tea*; to the ſecond, two Spoonfuls of the broad leafed white; and to the third, two Spoonfuls of broad leafed red *Sage Tea*, and ſet them all Night in a cold Window; next Morning, the firſt had about half a Spoonful of *Serum* on its Surface, which was cover'd with a very thin Pellicle; the Liquor was black below the *Serum*, and red at Bottom; the ſecond was thicker, blacker, had a ſtronger Pellicle at Top, and leſs *Serum*; the third had a thinner Pellicle, more *Serum*, and not ſo black, nor of ſo ſtiff a Conſiſtence. Two Spoonfuls of *Green Tea*, to two Ounces of Blood, made the laſt much thinner and redder than any of theſe: Becauſe *Sage* had communicated its whole Oil to this ſtrong *Tea*, and Oil thickens extravaſated Blood. ---- Next I divided two Drams of a Muſcle of a back Loin of Beef, into four Parts, their Length was five Inches; one I put into a Spoonful of *Green Tea*, another into a Spoonful of *Pig Sage Tea*, a third into a Spoonful of white, and a fourth into a Spoonful of broad leafed red *Sage Tea*, and let them ſtand forty eight Hours; that in the *Green Tea* was ſhrunk up moſt, *viz.* half an Inch, but ſtretched out two eighths of an Inch more; this *Tea* was turned of a whitiſh brown Colour; that in the *Pig Sage Tea* had ſhrunk up five eighths of an Inch, being only four, three eighths; and ſtretched to four, ſeven eighths and a half. That in the white *Sage Tea* was drawn up a quarter of an Inch, and ſtretched to five Inches; that in the red *Sage Tea* was only ſhrunk to four, ſeven eighths, and ſtretched to five Inches and one eighth: The whole when taken out, weighed ten Scruples and ſixteen Grains, having gained four Scruples and ſixteen Grains, which imbibed Liquor had expanded the Veſſels, lengthened their Diameters, and ſhortened their Fibres. --- The Tinctures made by Copperas, Galls, and Spirit of Hartſhorn, but eſpecially the firſt upon *Sage Tea*, do alſo ſhew, that this Plant contains ſore it ſtands out the Winter Colds and Storms, when the other muſt languiſh. 2. *Sage* requires more Nouriſhment than *Tea*, becauſe it perſpires more. 3. Therefore *Tea* is leſs Aromatick in its Leaf, but of a more fragrant and agreeable Taſte in Infuſion. 4. Becauſe the Oil and Earth of *Tea*, are more cloſely united and coherent, therefore 'tis a greater Aſtringent. 5. But *Sage*, containing much Spirit and volatile Parts, therefore this is a more immediate Invigorater of the Nerves, and ſends a larger Supply into their imperceptible Tubes; but *Tea*, conſiſting of more fix'd and ſolid Parts, gives a more durable Strength and Elaſticity to the Fibres; ſolid Particles enduring a ſtronger and longer Attrition before they be abraded, than light porous Corpuſcles.

There are not only ſeveral very notable Differences betwixt *Tea* and *Sage*, but there is ſome Variation amongſt the ſundry Kinds of *Sage*, as you may ſee in the marginal Notes.

Sage a Cephalick and Nervous Plant.

The grateful, aromatick Smell and Taſte of *Sage*, diſcover at once its aromatick and penetrating Parts, which make it uſeful in all nervous Diſorders, as Palſies, Convulſions, ſleepy Diſeaſes, uterine Affections, or any Relaxation and Obſtructions of the Nerves, eſpecially where they proceed from a Thickneſs of the Blood, or its Viſcidity, which make the Circulation ſluggiſh in the Veſſels of the *Meninges* and Brain, diſtend their Fibres, and ſo cauſe Pain or Dulneſs. Here the Parts of *Sage* being readily commiſcible with the Blood, and carried with it into the Brain, accelerate its Motion, diſſolve its groſs or ſizy Subſtance, invigorate the Veſſels, and ſo preſerve or reſtore the Separation, and equal Diſtribution of the animal Spirits. Hence *Rulandus* wonderfully extols its Infuſion in Wine, and with this one Medicine declares he has cured many Epilepticks. He makes *Sage* one Ingredient in his excellent ſtimulatory Powder in ſleepy Diſeaſes; ſo is it in *Tauvry*'s ſneezing Powders for Ulcers of the Noſe, whether Venereal or other: And of *Sage*

Juice

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contains much finer and ſubtiler Parts than *Tea*; for as Copperas turns one blue, ſo it makes the other of a blackiſh Green Colour, becauſe the different extracted Particles, which ſwim in *Tea*, having larger Surfaces, they refract, incurvate or change the Determination of the Rays of Light, for the greateſt Refrangibility of Rays appears blue. This is further evident from Spirits of Hartſhorn turning *Sage Tea* with Copperas of a dark red, and the Cup waſhings of a Purple, here the Rays being leſs refracted, change the Colour to a reddiſh Caſt. It's alſo plain from *Sage Tea* with Copperas depoſiting a leſs Sediment than *Bohea*: Now, becauſe the Parts diſengaged and extracted from *Tea* by warm Water, are very minute, (yet not ſo ſmall as to afford a Spirit) therefore they exiſt more univerſally in the Liquor, and being opake Particles they give the greater Refraction to the Rays: But tho' the Particles drawn off from *Sage* be really ſmaller, and in greater Diviſions, yet are they ſo minute, that they refract the Rays leſs. ---- For a fuller Analyſis of *Sage*, you may conſult Mr. *Bourdeline*.

Juice he makes a ſtrong vulnerary Errhine, which at the ſame Time drains off much Seroſity by the ſalival Glands. And that excellent practical Phyſician *Riverius* preſcribes it very profuſely in moſt Diſeaſes of the Head, and in all Forms, as Powders, Decoctions, Infuſions, Opiates, Errhines, Sternutatories, Gargles, Fumigations, Clyſters, Fomentations, Cucupha's, Ointments, Liniments, *&c.*

An Alexipharmick.

Take we *Alexipharmicks* in that ſtrict Senſe, wherein they are ſaid to prevent the Miſchiefs, occaſioned by the Bites of poiſonous Animals, then *Lenicerus* ſays, *Sage* Wine, or a Decoction of *Sage* in Wine expels all poiſonous Infection, and alſo that of venemous Beaſts, if the Decoction be drunk, and the Wound waſhed with it. *Antonius Mizaldus* prefers the Application of its freſh Leaves to the Wound: *Dioſcorides* preſcribes *Sage* as an Antidote againſt the Poiſon of the Sea Scorpion, and Sea Parſnip, *& contra Murenæ ictum.* *Geſnerus* and *Ægineba* order *Sage* Wine, or *Sage* in Wine, to prevent Miſchiefs from the Sea-Dragon, *& ad Morſum Muris.* And *Petrus Aponenſis* propoſes it againſt the Fumes of Mercury. But theſe Gentlemen having left us unapprized of the Nature and Way of acting, both of theſe Poiſons and their Antidote, we are excuſable if we have Recourſe to other Preſervatives, whoſe Mechaniſm we are better acquainted with; for it's neceſſary that he who preſcribes an Antidote, ſhould know whether the Poiſon acts, 1. By relaxing the Solids, and rarifying the Fluids, as Opiates: Or, 2. By cauſing a violent Contraction and Convulſion of the Lungs, (beſides its other Miſchiefs) as Arſenick: Or, 3. By coagulating the Liquids, which all ſtrong Acids do: Or, 4. By deſtroying the very Texture and Subſtance of the Veſſels and Fibres, as *Mercurius ſublimatus corroſivus:* Or, 5. Whether it acts by all the laſt three: Or, 6. By a particular Alteration of the Texture of the Maſs of Blood, as in a *Hydrophybia*, and Epidemick Diſeaſes: Or, laſtly, by inſpiring mineral Perfumes, or a thin watry Vapour loaded with ſuch Particles, as, when united together, do compoſe ſolid and heavy Maſſes, will expel the Air out of the Lungs, and ſtraiten the Paſſage of the Blood Veſſels, by their too great Gravity, and ſtop the Circulation of the Blood, as is the Caſe with the Animals let down into the *Italian Grotta de Cani.*

A Diuretick.

As *Sage* aboundeth with Oil, it relaxes and dilates the renal Veſſels. 2. The warm Water wherein it is infuſed, divides and dilutes the Blood. 3. Its Salts ſtimulate the Coats of the Veſſels, and make the Blood move more briskly: Hence *Sage* obtains a very conſiderable Place in the Claſs of Diureticks, and as ſuch is ſerviceable where Seroſities of the Blood abound, as in a Cachexy, Sluggiſhneſs of the Spirits, beginning Dropſy, and in Obſtructions of the *Viſcera* of the lower Belly, *viz.* of the Liver, Spleen, Pancreas, Meſentery, Kidneys, *Uterus*, *&c.* And in Collections of Matter in the Breaſt, or falling and ſettling of Defluxions upon the Joints in a Jaundice, *&c.*

Abſorbent.

Sage affording a ſpongy, light, and porous Earth (eſpecially if taken in Subſtance) ſheaths the Aſperities of ſharp, corroſive Humours, and dries up ſuperfluous Humidity, it's therefore a good Sweetner of the Blood, or Abſorbent.

A Diaphoretick.

Having large Store of volatile Parts, they invigorate the Fibres, and rarify our Juices; hence is the Blood put into a brisker Motion, which diſengages its Particles more from one another, (the warm Water wherein the *Sage* is infuſed, diluting the Juices at the ſame Time) and enables or fits them to paſs the Skin more eaſily, and in larger Quantity: But if the different Attractions of the Blood be diminiſhed, *i. e.* if its Particles happen to be leſs attached or united to one another, or if it abound with a greater Proportion of Seroſity, than can eaſily paſs the milliary Glands and excretory Ducts, theſe volatile Parts will cauſe not only a free and brisk Perſpiration, but Sweating; the warm Water relaxing the Pores, while the ſubtile Parts fuſe the Blood, and titulate the Veſſels; but if the Skin be not diſpoſed to relieve the Body of this Matter, then it is carried to the Kidneys, and proves diuretick: And of how great Service the preſerving or reſtoring a due Perſpiration or neceſſary *Diaphoreſis* is, our own Experience and daily Obſervation on others, may ſufficiently ſatisfy us. The Want of this often cauſes Colds, Coughs, Conſumptions, Fevers, intermittent, continual, malignant and peſtilential; Inflammations, bilious Looſeneſſes and Vomitings, Cholicks, Gout, Rheumatiſm, and ſeveral other Diſeaſes both acute and chronick. But *Sage* being a Promoter of Secretion and Excretion, both by the Skin and Kidneys, may be juſtly termed an excellent Preventer of this black Catalogue of Diſtempers.

An Aſtringent.

Sage being thus Diuretick, Diaphoretick, and Sudorifick, thereby expelling the ſuperfluous Seroſities, and alſo abſorbent, in drying up ſome Humidity, and ſheathing the naked acrid Particles of the Blood, that they act not upon the containing Parts, it challenges the Name of a Reſtringent, (tho' only ſuch accidentally) and ſo is uſeful in Hemorrhages of Blood, occaſioned from the Thinneſs and Sharpneſs of the Blood, and Weakneſs or Corroſion of the Veſſels; and in watry Looſeneſſes, *&c.*

A Vulnerary.

Sage Tea Infuſion or Decoction, being a thin, fine and ſoft Liquor, in which, neither acid Salts, nor acrid Oil are predominant. 2. *Sage* containing a *Mucus* or glutinous Earth, which is abſorbent, and a bland Oil; the Water alſo, wherein it is infuſed, being a great Diluter, theſe either obtund or diſſolve reigning Acids in the Blood Veſſels, whether conſtituted of oleaginous, ſaline or terreſtrious Particles. 3. This Infuſion attenuating thick or groſs Particles, the Chyle and all the animal Juices are made better, ſofter and thinner. 4. This is an equally diluting Diet, and alſo keeps up a regular Warmth in the whole Parts. Now where all theſe Things concur, they remove thoſe Obſtructions which prevent Secretion in the ſoft and tender Parts of our Bodies, that is, they beget a free Influx of Liquids into theſe Parts, and theſe Liquids being ſoft and glutinous (from the fine Oil and mucous Earth) find a free Paſſage into the ſmalleſt Veſſels, whereby the Fibres are made capable of Extenſion by the Fluids; ſo as ſeparated Veſſels being thus extended, meet and unite again, and not only do they meet, but they are ſo interwoven, braced up and ſtraitned, that nothing beſides Sweat and perſpirable Matter can paſs their Pores or Interſtices, after which they become dry, the Veſſels being extended and united, the Exſudation or Efflux of their Fluids ceaſes. Now, whatever Vegetable conſiſts of theſe Parts, and produces theſe Effects, is a Vulnerary; but *Sage*, infuſed in Water, or any thin, penetrating, diluting Liquor, being ſuch, is juſtly term'd a Vulnerary, and as ſuch has long, and is ſtill continued the Baſis both of Diet-Drinks, and Ointments, by many charitably diſpoſed Women, and Countrey People, and theſe they keep as great *Noſtrums* in the Cure of Wounds; but a better Acquaintance with the Vegetable Kingdom, wou'd provide them with many more Aſtringent and Vulnerary. But though ſtrong Aſtringents may produce a *Callus* ſooner, yet this notable Inconvenience often attends their Uſe in larger Wounds, eſpecially of the membraneous and nervous Parts, that the lately extended Fibres, being too cloſely braced up, they reſiſt the neceſſary Exhalation of the perſpirable Parts, which occaſions a Difficulty of Motion in the Liquids about thoſe Parts, and Perſpiration is ſtopp'd or diminiſhed; hence when the external Preſſure of the Air is increaſed, that mix'd with Blood acting with a greater Elaſticity upon thoſe ſtraitned Parts, exerts its Force in the more indilatable Tubes, and cauſes Pains; while at the ſame Time the increaſed Gravity of the Atmoſphere preſſes more ſtrongly upon them, but chiefly the Application of ſtrong cicatrizing Medicines, as they leave a greater Scar, ſo they cauſe more intenſe Pains before Change of Weather, in Froſts, and Storms of Wind, eſpecially Eaſterly, *&c.*

Detergents are very nearly allied to Vulneraries, for theſe are not only indued with ſuch active Principles, and ſuitable Configuration of Particles, as diſpoſe them and the Fluids in which they are mix'd, to Motion, and to attenuate and diſſolve, if not abrade and carry along with them, into the larger Canals, ſuch Adheſion as laid on the Inſides of the A Detergent.

ſmall Veſſels, and prevented their Nutrition and Invigoration, by lying betwixt them, and the truly nutritive Parts of the Blood, (which being ſmall, are always confined to the Axis of the Veſſels, where the Inſides are lined with any *Lentor.)* But when this *Lentor* is attenuated and ſoftned, they come with a mucous, ſoftening, adheſive Subſtance, conſiſting of a comparatively larger Surface and Flexibility of its component Parts; this eaſily falls into Contact with, and cleaves to the attenuated, ſoftned *Lentor*, whereby both are carry'd off, and the Veſſels, Wounds or Ulcers are cleanſed; after which, the adheſive Parts of the *Sage* (or other detergent Medicines) will readily ſtick to the Veſſels and Fibres, and defend them from the *Mucus* of the Blood, till its freſh Current, in the ſmall, wounded, lacerated, or ulcerated Tubes, ſupply the Place with good and proper Nouriſhment, 'till the Waſte or Diſtance is made up, and the Parts healed. Now *Sage* is manifeſtly poſſeſs'd of thoſe active attenuating and diſſolving Particles, as we ſaw from the Exhalation of near three Parts of its Extraction in Spirits of Wine; it alſo abounds with very adheſive Particles, as was ſhewn from the Saponatiouſneſs of the remaining Extract, and the Plenty of *Mucus* which rectified Spirits drew from the Leaves after their Infuſion and Decoction. 'Tis plain then *Sage* is a Detergent; and for the ſame Reaſons, an Ointment or Liniment of *Sage* will alſo be an external Detergent.

Pliny ſays, That *Sage* is both an Emmenagogick and Anti-emmenagogick, *i. e.* it provokes obſtructed *Menſes*, and alſo ſtops their overflowing. *Cheſneau* ſays, that the great *Noſtrum* uſed by the Court Ladies in the *Fluor albus*, is Powder of *Sage*, Sarſaparilla and Balauſtine Flowers, of each a like Doſe, two Drams every Morning for ſome Days. *Agrippa* ſays, where the *Uterus* of a Child-bearing Woman is too lax and cold, being loaded with ſlimy adheſive Humours, which prevent their Retention and Impregnation by the *Semen*, *Sage* eaten with Salt four Mornings together, abſtaining in the mean time from the Huſband, will certainly make them retentive, and remove Sterility; it alſo prevents threatned Abortions; therefore in *Cyprus* and *Egypt*, after a deſolating Plague, the Women drunk *Sage* Juice to make them more fruitful, ſuppoſing the contagious Air had weakned their generative Parts. I might add many other uterine Diſorders, wherein *Sage* has been, and is ſtill accounted ſerviceable, but Brevity and Decency oblige me to paſs them by; and only enquire what is neceſſary to conſtitute a Plant an uterine, and then ſee whether theſe Requiſites are to be found in *Sage*. An Uterine. An Uterine muſt firſt remove ſuch Obſtructions as prevent the generating of good Blood, whether theſe Obſtructions lie in the Stomach, Inteſtines, Meſentery or Blood Veſſels. 2. It muſt promote the Generation of not only good, but Plenty of Blood in the Body. 3. It muſt ſometimes tend to, or promote the Rarifaction of that Blood. 4. Where a *Lentor* prevails in the Blood, it muſt haſten the Attenuation, Diſſolution and Evacuation of this *Lentor* or Viſcidity by the Skin and Kidneys chiefly. 5. It muſt increaſe the Reſiſtance of the Blood againſt the uterine Veſſels, to promote their Rupture: And laſtly, whatever produces the laſt two Effects, muſt be of a diſſolving, ſtimulating, detergent, ſaponatious Nature. But I have already proved *Sage* to be a deobſtruent, a ſtimulant and detergent, of a ſaponatious Nature, and by reaſon of its volatile Parts a Rarifier of the Blood: Therefore *Sage* is an uterine, tho' I don't ſay of the moſt certain and powerful Nature. —— But why *Sage* ſhould ſometimes put a Stop to the menſtrual Evacuation is, 1. When the Blood is too ſerous, and the Pores of the Skin too much lock'd up, ſo as the greater Load falls upon the uterine Veſſels, which are deſtitute of the Aſſiſtance of Valves; here, whatever is a briſk Diaphoretick, attenuates the groſs *Serum* of the Blood, and fits it to paſs the ſecretory and excretory Paſſages there, and at the ſame Time clears theſe excretory Ducts of their *Mucus*, and invigorates theſe ſmall Veſſels for their proper Uſes, muſt relieve the Machine of much inundating *Serum*; but *Sage* is demonſtrably an excellent Diaphoretick: Therefore, 2. When the Blood abounds with acrid Particles, which corrode or keep open the ruptur'd Veſſels, and cauſe an immoderate Diſcharge; whatever is an Abſorbent of this acrid Humour, and a Diluter of the whole Maſs, muſt act the Part of an Aſtringent; but *Sage* abounding with a mucous, gluey Earth, and a ſoft fine Oil is an Abſorbent, and Sweetner of the Blood, as the Water wherein it is infuſed is a Diluter; therefore it very well in theſe Reſpects merits the Character of an Anti-emmenagogick. On theſe Accounts *Mathiolus* commends the inward Uſe of *Sage*, in all Defluxions and Diſtillations of ſharp Rheum on any Part, whether the Eyes, making them often drop involuntary briny Tears, or on the Glands of the Throat, Mouth or Lungs. —— And as it is detergent, it's found often ſerviceable in Diſeaſes of the Breaſt, for its Juice mixt with warm Water, and drunk in a Morning and Afternoon, cures a Hoarſeneſs: And as it is an Abſorbent and Diaphoretick, Wormwood and *Sage* taken together, in Subſtance, Infuſion or Decoction, have been frequently obſerved to cure a Bloody-Flux.

A Stomachick.

Where the Stomach is lax, weak and unfit for Digeſtion, becauſe of ſo much Slime or Phlegm, loading or palling it, Reſtringents poſſeſs'd of volatile and tenacious Parts, which retrieve the true Tone of the Coats and Fibres, are uſeful, by abſorbing ſome of that ſuperfluous Humidity, and ſupplying the Solids with freſh Spirits; but *Sage* having theſe volatile Parts, together with an abſorbent *Mucus*, is a proper Stomachick, tho' inferior to *Green Tea* in its Aſtringency, yet ſuperior to it in the Fineneſs and Subtilty of Particles.

Simon Paulus ſays, He often preſcribed to Countrey People in the Tooth-ach, with Succeſs, a Decoction of a handful of *Sage* Leaves, Tobacco two Drams, Barley Meal a Pugil, boiled in Vinegar of Beer, to gargle the Mouth with frequently. *Mathiolus* applauds its inward and outward Uſe, not only in Diſeaſes of the Head, from a Weakneſs of the Veſſels, and Viſcidity of the Blood; but in arthritick Pains. A Decoction of its Leaves in Wine, both for Drinking and Fomentation, is good to reſtore Paralytick Members; its Juice kills thoſe Inſects which either get into, or breed in the Ears. And as it's a great Strengthener of the Nerves, 'tis accounted highly ſerviceable in Decays of the Memory, eſpecially the Conſerve of its Flowers. Its diſtilled Water, incinerated Salt, chymical Oil, and Conſerve, were formerly all kept in the Shop, but now the two laſt are only retained, and ſeldom order'd, becauſe little relied on. Some old Phyſicians ſay of *Sage*,

Schola Salern.

Confortat Nervos, manuumque tremorem
Tollit, & ejus ope Febris acuta fugit.
Salvia ſalvatrix, Naturæ conciliatrix.

Explain'd.

It comforts the Nerves, being a warm Aromatick, abounding with volatile, and ſome adheſive Parts, which ſtimulate and cleanſe the Veſſels, actuate them with freſh Vigour, attenuate the Humours, and promote the thinning, carrying off, and diſcharging of what is ſizy, and loads, relaxes, and diminiſhes the Circulation in the ſmall Veſſels, either of the Brain, or elſewhere; for the ſame Reaſon it's good in Tremors: It prevents acute Fevers, not only by keeping up or reſtoring the Tone of the Veſſels, but by preventing or diſſolving the Coheſions of the Juices, which lined and pall'd their containing Tubes. Becauſe it's ſo friendly to the Nerves, they formerly made a Wine of it, which was highly valu'd in all Diſeaſes of the Head, Brain and Nerves. They alſo uſed it in their Sauces, to excite the Appetite, promote Digeſtion, warm the Stomach, and help it to diſlodge viſcid, ſtagnating Humours; and to aſſiſt its more powerful Operation, in nervous Diſorders, they joined to it Caſtor, Lavender, Tanſy, Primroſe and Naſturtium; and becauſe it promotes Perſpiration much, they commonly ſaid,

Adde Roſæ Florem, minuuntq; potenter Amorem.

I ſhould now proceed to give a Collection of ſeveral Forms of Preſcriptions (whereof *Sage* is either the Baſis, or a very conſiderable Ingredient) ſuited to a greater Number of Diſorders, both internal and external, to which the human Body is ſubject; but I muſt remember, 'tis only an *Appendix* I am here propoſing, and therefore, as moſt agreeable and conſonant to this Deſign, I ſhall conclude with a few of the Inconveniencies attending the Uſe of *Sage*; for *Hoffman* juſtly obſerves, *ſuas etiam Qualitates habet noxias.*

The Inconveniencies of *Sage.*

As cold Weather, foggy Air, and old Age, generally occaſion Abundance of Phlegm and Sizineſs of the animal Juices, which indicate the Uſe of *Sage*, and *Sage Tea*, becauſe it is full of volatile Parts, rarifies the Blood, is a Diaphoretick, and Reliever of the Body by a copious Perſpiration; ſo theſe Things become Diſadvantages, and either wholly forbid, or at leaſt oblige us to a moderate Uſe of it in hot Weather, and alſo before, and at the Meridian of Youth; for then the Blood being rarified, (except made viſcid by ſome Accident) whatever *ſupra Modum* increaſes this Rarifaction, may either deſtroy its Texture, or drive its diſſolved globular Parts into the Lymphaticks, and ſo occaſion Inflammations and Fevers.

Bad in hot Weather, before and at the Meridian of Youth.

As marſhy Countries, phlegmatick Conſtitutions, and lax Fibres, require Invigorators, Attenuaters, Diluters, and briſk Diaphoreticks, ſo a dry Air, cholerick and ſanguine Conſtitutions, and a too corrugated Fibre, call for Things more emollient, abſorbent and relaxing than *Sage*, or its *Tea*, except drunk very weak, and in a moderate Quantity with Lemon Juice.

In a dry Air, to a cholerick, ſanguine Conſtitution, and a corrugated Fibre.

As a ſtuffing of the cuticular or renal Strainers, with any Slime, *Mucus*, or other groſs viſcid Subſtance, indicates the Uſe of Attenuaters, Diluters, and Evacuators thoſe Ways, ſo an Exceſs of thoſe Evacuations oblige us to uſe Thickners, Obtunders, and gentle Reſtringents, and therefore forbid the Uſe of *Sage*, or its *Tea*.

In extraordinary Evacuations, by the cuticular Strainers.

As in long or chronick Fears, Grief, or low Spiritedneſs, (wherein the Spirits, which ſhould invigorate the Muſcles, are ſpent on the Organs of the intellectual Faculty, and the Fibres relax and fall back, the Fluids alſo, through the Decay of the Reſiſtance of the Solids, form different Coheſions and Combinations, and turn ſizy) the uſe of nervous, invigorating and volatile Things becomes neceſſary; ſo in ſudden and violent Frights, ſtrong Paſſions, or great and long Exerciſe, which contract, and ſometimes convulſe the Muſcles and Veſſels, whereby their contained Fluids are quickly and impetuouſly ground down, hurried forward and expell'd, Diluters, Emollients, ſlippery and anodyne Things are to be uſed, which take off the Corrugation, or rather Criſpation of the Fibres, leave ſome *Mucus*, and ſoften the Fluids; but *Sage Tea*, eſpecially if ſtrong, being of a contrary Nature, is therefore unſafe, or at beſt can anſwer no valuable End.

In ſudden, violent Frights, ſtrong Paſſions, and long Exerciſe.

In threaten'd Abortions from a *Pletho-ra.*

In threaten'd Abortions from a *Plethora*, no Preparations of *Sage* are ſafe, becauſe, though it be ſomething Aſtringent, its rarifying the Blood with its volatile Parts, increaſes this Rarifaction, and makes the Caſe much worſe; and may certainly produce the Effects whereof we are afraid. Neither is it to be truſted in an exceſſive *Fluxus Menſtruus* from the Thinneſs of the Blood. And *Sage* with Salt I am afraid will prove no Cure of Sterility from the ſame Cauſe, except its Force upon the Skin be ſuperior to its *Impetus* on the Uterine Veſſels.

I might mention more Caſes, wherein the Uſe of *Sage* and *Sage Tea* is unadviſeable, but flowing from the ſame Cauſes, tho' appearing in a different Manner, and receiving other Denominations, *viz.* a too great Thinneſs, Scarcity, or Rarifaction of the Blood, a too great Expence of the animal Fluids, a Stiffneſs, Rigidity, or too ſtrong Reſiſtance of the Solids, whether from Diet, Watchings, Faſtings, hard Labour, great Evacuations, *&c.* they are deducible from the former Heads.

Water ſeparates Salts or Spirits, from Oil or oily Bodies.

Since no Infuſions or Decoctions of either *Tea* or *Sage*, are or can be made without *Water*, let us conſider this a little; though I ſhall not enter a Detail of its Uſes, either in the mechanical Arts, or Occaſions of Life, nor in a chymical Light; only let me obſerve, that from the preceding Proceſſes, we ſee it alone can ſeparate Salts or Spirits from Oil, or oily Bodies, by attracting them to itſelf: For it diſſolves all kinds of Salts, and incorporates them to itſelf, by their being inſinuated between the void Interſtices of the *Water*, and repelling the Particles of Air which lodge there. Hence diſſolve we ſuch a Quantity of *Salt* in any given aqueous Body, as fills up thoſe whole Interſtices. Then the Fluid can imbibe no more, nor diſſolve any more Salts, though at the ſame Time the ſame Mixture ſhall diſſolve Salts of another kind, their Particles being differently figured, and ſo capable of filling up, or finding a Place in the Vacancy left by the former. Thus may we diſſolve ſeveral kinds of Salts in the ſame *Water*.

Diſſolves all ſaline and ſaponatious Bodies.

Water acts the ſame upon all ſaline Bodies, it being their conſtituent Character, that they are inflammable and diſſolvable in *Water*. Thus *Water* may diſſolve the moſt ſolid and ponderous Bodies (Metals not excepted) as far as they are reducible to Salts; it alſo diſſolves all ſaponatious Bodies, *i. e.* all Mixtures of Oil and alkaline Salts, and ſeparates them. Now all the Humours in our Bodies plainly taſte ſaline, though none of them are ſalt itſelf.

Diſſolves Gums and gummous Bodies.

The Cauſe of all Fermentation and Putrefaction.

It alſo diſſolves all Gums and gummous Bodies, it being their Character that they are diſſolvable in *Water*. Fermentation without *Water* is impoſſible, *Water* alone can perform all Putrefactions. The Efferveſcence, Diſſolves not Reſin, Sulphur, Oil nor Earth.

ſcence, or inteſtinal Motion between contrary Salts, can only be excited by Means of *Water*. But it cannot act upon Reſin, Oil and Sulphur; the firſt being only inſpiſſated, or concenter'd Oil; the ſecond conſiſts of too large Particles, and thoſe too much entangled by one another, to be diſengaged by *Water*; nay *Water* repels it. Hence the Fat of our Bodies is not diſſolved by this Vehicle, which rather ſeems to contribute to the Collection of animal Oil in the adipoſe *Cellulæ:* Hence the Reaſon of that Briskneſs, Activity and Health of the Bodies of *Water* Drinkers. Earth is the fourth Body indiſſolvable by *Water*, as it is incombuſtible by Fire. By *Water* alone we are able to direct and determine all Degrees of Heat.

Summer *Water* loaded with other Matter.

Whatſoever *Water* is the moſt light, pure, tranſparent, ſimple, free from Taſte and Smell, warms and cools ſooneſt, has the beſt Colour, and wherein Herbs and Pulſe infuſe and boil ſooneſt, is the beſt; and the Rain Water may really appear freeſt from all adventitious Mixtures, yet if you gather that which falls in a ſultry hot Summer's Day, after a loud Thunder-clap, let it ſtand and ſettle, you ſhall find a real Salt ſticking to the Bottom of the Veſſel, from the infinite Kinds of heterogeneous Matter ſwimming in this vaſtly commoved Atmoſphere[k].

But

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[k] *Auguſt* 27. Being twenty five Days after the laſt Rain, and the preceding eleven laſt Days having been exceſſive hot, I infuſed one Dram of fine *Green Tea* in nine Ounces of boiling Pipe-water; let it ſtand eighty Minutes; then pour'd off the Liquor, and dried the Leaves, and it had loſt only twenty one Grains, which is two Grains leſs than it loſt in the ſame Pipe Water in the laſt Winter's Froſt. *Auguſt* 28. Being a rainy Afternoon, and ſultry hot, I gather'd a Pint of Rain Water in a new, clean Tin Pan, and boil'd ten Ounces of it in a cloſe Tea Kettle, pour'd it on a Dram of the ſame *Green Tea*, let it ſtand three Hours, then pour'd off the Liquor, dried the Leaf, and weighed it, and it had loſt only eleven Grains; from which ſubſtract two Grains, and only nine remain, which is all that this *Water* had imbibed from the *Tea*, *i. e.* only one third Part, or near it, of what Winter Pipe Water had extracted from *Green Tea*. Then I weigh'd in Hydroſtatick Scales the Liquor drawn off, and it had not gain'd the hundredth Part of a Grain, being exactly the ſame with an equal Quantity of Pipe Water. Then I hoped to find the reſt of the boiled Rain Water, lighter than the ſame Quantity of Pipe Water; but upon weighing both oppoſite to one another, there was not the leaſt Difference. Here I was at a Loſs to think, what was become of the nine Grains that the *Tea* had loſt in the Infuſion; then I imagined that the like Quantity of adventitious Matter contain'd in the Rain Water, might have penetrated and lodged in the Pores of the Leaves; ſo that the *Tea* had imbibed near as much as it had given out in the Infuſion, for it was the worſt taſted Liquor I had ever found of the Sort. To be further ſatisfied; the next Shower, the ſame Day, I ſet the Tin Pan dry under a very green Apple-tree, then weighed two Ounces of the Rain that dropped from the Leaves, and I found it two Grains heavier than the ſame Quantity of Pipe Water. Then

I ga-

Water never found unmix'd with other Matter.

But the Winter Rain has very little Alteration, eſpecially if gather'd in Froſt, when the Earth's condenſed Surface has ſealed up the Exhalations. But take even this pure Rain Water, filtre it a hundred Times, dry the Cap each Time, and you ſhall ſtill obſerve an Encreaſe of Weight from the Adheſion of earthy and other heterogene Particles in the Paper. Hence Dr. *Boerhave* has juſt Reaſon to be convinced, that no Man ever yet ſaw a Drop of pure *Water*. All we can promiſe our ſelves is, that it be free from this or that ſort of Matter; but that it be wholly deprived of Salt, is eternally impoſſible, ſeeing both Earth and Air abound with it.

Water the moſt penetrating.

Water is the moſt penetrating of all Bodies next to Fire, and the hardeſt to be confined: It makes its Way through all Wood, and is only to be retained by Glaſs or Metals. Nay, by ſufficient external Force it may even be expreſs'd through the Pores of Gold, though the moſt compact of all Matter in our Orb. It is ſo fluid, that it conſiſts of ſmaller Particles than Air it ſelf, for Leather or Bladders confine the laſt; but the firſt is perpetually ouzing through them, till the whole is ſpent. Our Atmoſphere ſtill encreaſes its Gravity, as it approaches our Earth; and no Heat of the Sun can ſo rarify it, as to make the ſuperincumbent Pillar either equal to, or heavier than its Baſis. But the ſame Sun or Heat rarifies the *Water* into ſuch minute Particles, as are ſpecifically lighter than the Air, and are drawn up into Clouds at a great Diſtance. Hence it paſſes through the Pores and Parts of Animal Bodies, where the Air has no Acceſs; as it moiſtens and diſſolves the glutinous Matter hanging on the fine Fibres of the Membranes, renders them more pliable and diſtractile. Hence *Water* enters the Compoſition of all Bodies, Animal, Vegetable and Foſſils, and is again readily ſeparable from them; which cannot be ſaid of Fire. This Property of *Water* joined to its Smoothneſs, makes it an excellent Vehicle for the fit and eaſy Conveyance of the nutritious Matter of all Bodies; ſeeing it never plugs up the Pores, but leaves Room for the following *Water*. Tho' *Water* ſeems ſo little coheſive, and ſeparable from other Bodies, yet it will firmly attach and bind together the moſt ſolid Maſſes. *Water* mix'd with Earth, or Aſhes baked by a vehement Heat, produce a Veſſel, indiſſolvable by the moſt intenſe Degree of Heat. Neither is *Water* elaſtick, ſeeing it is incapable of being reduced to a leſſer Compaſs.

Conſiſts of leſs Particles than Air.

Separates Bodies beſt.

And cements moſt ſtrongly.

Hence,

I gather'd two Ounces of the Rain Water of the ſecond Shower (the firſt having ſufficiently waſhed the Slate and Lead, from the Leaden Spout on the Houſe Side) and it weighed half a Grain leſs than the ſame Quantity of Pipe Water; ſo that the Leaves of the Apple-tree had increaſed the ſpecifick Gravity of the Water two Grains and a half.

Corollaries from theſe Properties.

Hence, as to the Nature of *Water*, we may be allowed theſe *Corrolaries*, 1. Its Parts are infinitely ſmall. 2. Exceeding ſmooth, free from all ſenſible Aſperities. 3. Moſt ſolid. 4. Entirely Tranſparent. 5. Hard, Rigid, and Inflexible.

Why Drink neceſſary to preſerve animal Bodies.

All animal Bodies are ſo contrived, that their Blood and Juices are in continual Agitation, and the watry and ſpirituous Parts thereof in conſtant Diſſipation, either by inſenſible or ſenſible Evacuations. Therefore was there a Neceſſity for the Reparation of this Loſs, to prevent the Deſtruction of the animal Oeconomy, which in this Caſe could only be preſerved by Drink; therefore has wiſe Nature abundantly ſupplied us with *Water*, which is certainly moſt wholeſome and agreeable to moſt Conſtitutions; and moſt ſuitably anſwers all the Intentions of a Potable. For though it nouriſhes not, yet is it the beſt Promoter of a healthy and lively Nutrition; and all other compound Drinks are only ſo far wholeſome, as they are mix'd in ſufficient Quantity with this. Nay, in Strictneſs and Propriety of Speech, Animals have no other Drink but *Water*. For all compound Liquors are either for Nouriſhment, Gratification of Taſte, Luxury, or for ſome medicinal Intentions. Ale, Wine, and Spirits, are only a Jumble of Salt, Oyl and Earth, blended with *Water*; not one nor all of which three can anſwer any one, much leſs all the Intentions of Drink, if ſeparated from *Water*. For Salts cryſtallize, become hard and dry; Earth is apt to petrify, (witneſs the Stones in the Kidneys, Gall, Bladder, &c.) Oil coagulates our Juices, turns rancid, excites Thirſt, prevents the Diſtribution of Nouriſhment in the Body, &c. It is only Earth that gives them Being, Form, Increaſe and Continuance; or in other Words, that keeps them up. Therefore *Pliny* ridicules the Humour of Mankind, which is at ſuch Pains to prepare other Potables, ſince Nature has furniſhed us with one that is far more wholeſome for common Uſe than any we can invent. For others are either taken indiſcreetly, without Regard to the ſundry Ages, Conſtitutions, Seaſons, Sexes, different Ways of Life, &c. or they are drank to Exceſs. Thus far was neceſſary to premiſe before I preceded to the following Propoſitions, which contain what I have here to add on *Water*.

Water the beſt Drink.

Prop. 1. Water *of all other Liquors quenches Thirſt the beſt.*

Prop. 2. Water *of all other Liquors promotes a true nutritious and healthy Digeſtion beſt.*

Prop. 3. *This of all other Liquors beſt makes up the Loſs we continually ſuſtain of the moiſt and watry Parts of our Blood and Juices.*

Prop. 4. *The due Uſe of this in the Youth and Manhood of healthy Bodies, is the beſt way to attain a long and comfortable Life.*

In all which I conſider *Water* only in a dietetick Light.

Why *Water* quenches Thirſt beſt.

1. Thirſt is occaſioned either from a Thickneſs, Saltneſs, or Sizyneſs of the Blood, or the Increaſe of ſome other Evacuation, which calls for, or drains off too much of the ſerous Parts of the Blood; or laſtly, from a Conſtriction of the Glands, or excretory Ducts, of the Mouth, Throat and Stomach. Now *Water*, from the Smallneſs of its Parts, the Solidity of its Particles, and the due Quantity drunk, thins the grumous or ſizy Blood, fills and expands the Veſſels, (whereby together with its relaxing Power when warm) the ſecretory Ducts are opened; the adheſive Slime is diluted and waſh'd off; the Orifices of their ſmall Diviſions are unlocked, way is made for the Ingreſs and Egreſs of the Fluids, whereby Secretions are performed, and *Saliva* produced, to moiſten the Inſide of the Mouth, Throat and Gullet; and all this done without leaving any *Stimulus* upon the Veſſels, which may contract them, ſo as to leſſen or hinder Secretion. Or if the Blood abounds with groſs Salts, which, irritating the Parts, make the Veſſels draw up, or ſhut up the ſecretory or excretory Ducts, and cauſe an Attrition, Heat, Dryneſs, or uneaſy Senſation in thoſe Parts; *Water* drinking (eſpecially if its Cold be taken off) encreaſes the *Serum* of the Blood, helps to diſſolve its Salts, keeps them at a greater Diſtance, hinders their Attraction till part of them is evacuated and ſpent, and their Quantity diminiſhed.

The Excellency of *Water* in thoſe Intentions is conſpicuous in ardent Fevers, attended with intenſe Thirſt, Blackneſs and Dryneſs of the Tongue, Mouth and Throat, from the Thickneſs and Incapacity of the Blood's Motion in the ſmall Veſſels. It's true, during the Fever, the Blood may be more rarified, whereby it's fitted to get into the ſmall Conic Veſſels, which it obſtructs, and overpowers the propulſive Reſiſtance of its containing Tubes, which at the ſame Time are ſtimulated and contracted by the Salts in the Blood: In the mean time both the Fever's Symptoms and Danger are increaſed: Now what can be better fitted to both, than a Drink which thins, cools, relaxes, diſſolves, and increaſes the Quantity of the Juices, and promotes both Secretion and Excretion, which is only attained by a regular, more full and eaſy Circulation of better mix'd Fluids? And ſuch a Drink is *Water* chiefly. The Truth of this is manifeſt and undeniable by thoſe, who have any Sort of Acquaintance with the ſimple and ſucceſsful Practice of the Ancients, who lived before that *Vulcan*, *Paracelſus*, who firſt introduced the hot Regimen in all Fevers, which proved fatal and miſchievous, till the ingenuous and immortal *Sydenham* was ſent of Heaven to check that Plague, and reſtore the temperate Courſe, with the imminent Danger of his own Life. A *late Noveliſt*, and moſt invective and ſatyrical Scribler (who deſerves no Name here) againſt the Uſe of *Water*, has with his own Pen prevented his whole Deſign, by confeſſing it was the Practice of all the Ancients, and begins with *Aſclepiades*, who was Co-temporary with *Pompey the Great*; then he puts it to the Vote, *Drink Water or not:* And according to his own Scrutiny and Report, the Poll ſtands thus, *Yea's* 32, beſides a Multitude of Pupils and others: *No's* 2, and himſelf. But finding himſelf outvoted, and that it's impoſſible for him to carry his Point this Way; he condemns and rejects the Ancients by the Lump, ſaying, *They are no Precedent for an* Engliſhman, *therefore they are of no Authority*. But his Paſſion falling, and being aſhamed of this publick Aſſertion, he flies to another Shelter; and gathers up a Catalogue from *Engliſh* Writers, in what Caſes *Water* is good or bad, but imprudently and blindly concludes with a vaſt Superiority in Favour of the firſt.

Why Ale, Wine, or Spirits quench not Thirſt.

Let us next ſee how improper Ale, Wine or Spirits are for this Purpoſe. We often ſee, that Ale is ſo far from quenching Thirſt, that it excites and increaſes it: 1. Becauſe the Viſcidities in the Liquor, being its lighteſt Parts, they will ſtill be neareſt the Sides of the containing Veſſels, whilſt the more fluid keeps the *Axis*, or middle: This Viſcidity, eſpecially in a rapid Motion of the Blood, lies between the Orifices of the ſmall ſecretory Ducts, and the more moiſt and watry Part of the Blood; whereby the Secretion of the laſt will be exceedingly leſſened: For in an accelerated Motion of the Blood, its thinner Parts will ſtill be in the greater Veſſels, where no Secretion is performed; but the Circulation being ſlower in the ſmall Veſſels, and its Viſcidities ſtill leſs diſpoſed to Motion, and having the greateſt Time and Advantage to attract one another, the greateſt Bulk of them will lie in thoſe ſmall Veſſels. — But all the Secretions being performed in thoſe minute Tubes, and they ſuſtaining the greateſt Share and Load of thoſe Viſcidities, which lying neareſt the internal Surfaces of the Veſſels, and the Orifices of the ſecerning Tubes, therefore Secretion muſt be diminiſhed; the Viſcidity ſtill increaſes, till there is not ſufficient *Saliva* ſtrained off to moiſten and cool the Mouth, Throat and Stomach; and the little that is ſecerned, is only the thinneſt Parts of the *Mucus*, expreſs'd by the elaſtick Force and Action of the ſmall and leſs complicated Glands, whereby the remaining Juice becomes thicker, more indiſpoſed for Motion, obſtructs the Veſſels, and leaves a tough, ſlimy *Lentor* on them, which can only be waſh'd off by Dilution, ſtrong Exerciſe, or hard Labour. —— Beſides thoſe Viſcidities which chiefly conſiſt of earthy Parts, there is the Salt of the Grain mix'd with thoſe Liquors, which ſtimulates the Veſſels: This Stimulation contracts them; the Contraction of their Sides ſhortens their Diameters;

makes them narrower and leſs; whereby they act with a more forcible Reſiſtance againſt their contained Fluid; drive the Viſcidity and Salts further on into narrower Paſſages; ſtrain off the thinner Parts, and leave the thicker, whether Earth or Salt, in the excretory Orifices, which hinder the Secretion of *Saliva*. 3. The Contraction of the Veſſels, and rapid Motion of the Blood, haſten off its thinner and more ſeparable Parts by Perſpiration and Urine, but the groſſer not being ſo eaſily attenuated and fitted for Diſcharge, continues in the Blood; and ſo much longer, by how much the purer Phlegm which ſhould dilute it, is diſſipated and ſpent; hence a Diminution of Secretion, and Increaſe of Thirſt.

Wine is alſo far ſhort of *Water* in our preſent Intention, *viz.* quenching Thirſt. For the ſubtile and volatile Spirits of the Grape preſently inſinuate themſelves into the Nerves, inflate and invigorate them; and all the Solids of the Body being only Sprigs of Nerves, muſt likewiſe be invigorated and endued with a greater Elaſticity and Force; whereby they will act with a greater Strength over the Fluids, and encreaſe their Motion. But theſe Spirits being the ſmalleſt, fineſt, and moſt ſeparable Parts of the Liquor, they will make their Eſcape firſt, and leave the Phlegm, groſs Salt, and Oil of the Liquor, an inactive vapid Maſs, encreaſing the Blood's Quantity and Conſiſtence. Hence the like Evils or Inconveniencies will follow, as we mentioned from the Uſe of Ale. It is true, good Wines have leſs Viſcidity, groſs Oil and Earth in them. But that is not to the preſent Purpoſe, when I am conſidering whether Wine or *Water* quench Thirſt beſt.

Brandy and Spirits are ſtill more unſuitable to this Intention, becauſe if of a right Standard, nine Parts of them ſhould be Spirit to ſeven of Phlegm; and I have ſhewed that theſe Spirits are readily diſſipated, and in their Diſſipation cannot quench but encreaſe Thirſt, becauſe as they are excerned by the Glands, they not only exhale themſelves, but carry along with them that little Phlegm wherein they were entangled, and leave the Parts dry and parched. Beſides, by their coagulating the Blood, and thickening the Juices, they increaſe Thirſt. Their minute Salts at the ſame Time pricking and corrugating the Veſſels. It is true, there are a few Caſes wherein Brandy or Rum is preferable to *Water*, *viz.* either in a Dropſy, when other Fluids drunk in any Quantity encreaſe the Diſtemper, and haſten Death; or when a Man is very hot and thirſty, then a Dram comes ſeaſonably before a Draught of Water; for warming the Stomach, it prevents the ſudden Contraction of its Veſſels, and their Retention of the more grumous and ſizy Blood; which without this Precaution would produce ſeveral Miſchiefs, which frequently happen in hot Countries, where the fatal dry Gripes are Epidemick. We have too many Inſtances at home, where Water drinking, in this Caſe, occaſions Coughs, Aſthma's, Phthyſis, Obſtructions and Ulcerations of the Lungs or Liver, or caſt the Perſon into a Fever. But 1. Spirits are not drunk here to quench Thirſt, but to prevent the Miſchiefs of a ſudden Shock and Contraction of the Veſſels from the *Water*. 2. Theſe Things are not the Fault of the *Water*, but of the Perſon's unſeaſonable and exceſſive Uſe of it; but if *Water* drunk tepid and ſparingly could be comply'd with, it would certainly quench the Thirſt better, and with more Safety. It is true, the Brandy or Rum is alſo ſomewhat Diuretick, and haſtens the Expulſion of ſome of the ſuperfluous Fluids in the Body. Thus I have proved *Water* to be a better Quencher of Thirſt, than either Ale, Wine or Spirits. *Q. E. D.*

How *Water* promotes Digeſtion.

Prop. 2. Another Intention indicating the Neceſſity of Drink is, to *aſſiſt Digeſtion*, as a Diluter of Food on the Stomach. Although other Drinks be Fluids, yet being mix'd with *Water*, they are ſtill more fluid, *i. e.* their groſſer Particles are ſeparated at a greater Diſtance from one another.

The Properties of a Diluter.

That a Diluter may become a Promoter of a free and full Digeſtion, it muſt have theſe Qualifications. 1. It muſt conſiſt of the ſmalleſt Particles of any Potable. 2. Theſe Particles muſt be ſeparated from one another with the moſt Eaſe and leaſt Force, *i. e.* their Particles muſt be of ſuch a Figure, as that they may act with the ſmalleſt Attraction, and have the leaſt Coheſion, and of all Figures, that of a Globular, has the Preference; becauſe ſuch have the ſmalleſt Contacts; and the attractive Force of Bodies is ſtill in Proportion to the Largeneſs of the Points whereon they touch, and the Quantity of Matter they contain. 3. That its Particles be capable of a ready and eaſy Interpoſition, or Penetration into the Food on the Stomach. 4. That it conſtringe not, nor harden the Food wherewith it's mix'd.

How *Water* mixes with the Food in the Stomach.

Now *Water* is poſſeſs'd of all thoſe Conditions in the moſt eminent and excellent Manner beyond all other Fluids. Let us now ſee how *Water* does interpoſe, mix with, and dilute the Food on the Stomach; and this it does, 1. By the muſcular Motion, and Action of the Stomach, Midriff, and Muſcles of the lower Belly, toſſing, preſſing and grinding the Food on the Stomach, by which it's impell'd into its ſolid Parts. 2. By the Heat of the Stomach and adjacent Parts, warming and rarifying the Drink, whereby its Parts become ſmaller, and more ſeparable, and are more eaſily forced into, and made to pierce our Aliments. 3. By the Rarifaction and Expanſion of the Air, mix'd with the Food when warm'd: It ſwells, takes up more Space, makes the Food more porous, and the rarify'd *Water* enters with greater Eaſe, and in more Plenty; ſo that *Water* has all the Requiſites of a Diluter. It is of a very fluid and ſeparable Nature, eaſily diſpoſed to Motion, it is rarified by the Stomach's Heat; theſe contribute to its ready Mixture with, and powerful Penetration of the Food; after both which it ſtill retains its Fluidity: By theſe it not only promotes Digeſtion on the Stomach, but in the Bowels and Body. For,

Advantage of a well diluted Chyle.

1. By the Motion of the voluntary Muſcles this thin Chyle, diluted with Water, is eaſily and fully forced into the Mouths of the Lacteals. 2. A ſmall Force being great when impreſs'd upon a Liquid of the ſmalleſt and moſt ſeparable Parts; the *Water* dilutes any mucous Matter which may ſtick to the Inſides of the delicate, thin, flexible Tubes, and the ſmall ſolid Particles of the Food ſweep it away when diluted, till it is caſt into the thoracic Duct, *Subclavian* Vein, Heart and Lungs; where it is ſeparated, divided, rendered more Fluid, fit for Motion, Circulation and Secretion, without cauſing Obſtructions in the longer, more contorted and ſmall Veſſels. 3. By this Fluidity of the Chyle, its Fineneſs and Diſpoſition to ready Motion, the Velocity of this Motion in the Body is accelerated, there being no Thickneſs, Groſſneſs, nor Coheſion in the Blood, to procure a *Remora* or Stop, nor much Sluggiſhneſs requiring any great Force to overcome its Reſiſtance.

How *Water* attenuates.

Water not only promotes Digeſtion as a Diluter, but as an Attenuator of a groſs, thick and ſizy Maſs of Blood in the Body, by inſinuating or intruding itſelf into the Pores, and within the Attraction of the *Moleculæ*, or unhealthy Combinations of our Juices, and dividing and ſeparating their groſs Parts, thinning their thick and earthy, fitting them to paſs the ſmall Tubes, and to be caſt back into the larger Veſſels, mixt with the Blood, and evacuated by their proper Outlets: On this Account *Water* may be termed an Evacuator, which leſſens the Tendency of the earthy, ſaline, or mucous Parts of the Blood to Coheſion; or remove ſuch a Tendency where it's beginning, the Veſſels being ſtill vigorous, and exerting their full Reſiſtance.

Whether ſtronger Liquors be proper Diluters.

Let us now enquire, how ſtronger Vehicles anſwer the Deſign of Digeſtion by Dilution; Wine, it's true, is a Diluter; but, at the ſame Time it's a Stimulator. Its Pungency ariſes firſt from its ſubtle Salt and Oil, which is its Spirit. 2. From its fixt Salt or Tartar, which continues longer in the Body, than the Spirits; gives a longer and more powerful *Stimulus*. Now as Wine ſtimulates and contracts the Fibres of the Stomach, ſo its Stipticity prevents the ſpeedy and eaſy Attenuation, Separation and Dilution of the Meat there. 3. Although the Spirits of Ale, Wine, Beer and Brandy, may eaſily penetrate the Parts of our

Food, yet promote they not, but retard Digeſtion, their Particles having a very ſtrong attractive Force; whereby, when they have inſinuated themſelves into the Subſtance of our Food, they bring its Parts nearer to one another, thicken inſtead of rarifying, harden inſtead of diſſolving it. This may be eaſily proved at pleaſure. Let any two Perſons of equal Health, Appetite and Digeſtion, dine upon Gooſe, Duck, Veniſon or Salmon, and each eat equal Quantities; let one drink clear, fine Table Beer, Water, or a little Wine in his Water, and the other drink Claret, or ſtrong Beer, or Ale; the firſt ſhall digeſt his Dinner much ſooner, eaſier, and have finer Chyle from it, than the latter. It's from this attractive Force in Spirits, that they preſerve animal and vegetable Bodies ſo long from Putrefaction.

Whatever Digeſtion is performed by the Aſſiſtance of Wine, Ale, ſtrong Beer or Brandy, is entirely owing to their watry Parts, and not, 1. To their Oils; for that begets Coagulations and Stagnations of the Blood, palls the Stomach, relaxes its Force, weakens its Fibres, renders its Orifices lax and glib, ſo as Meat paſſes the *Pylorus* crude, and ſcarce half digeſted; hence a ropy, thick and indigeſted Chyle. Nor, 2. Is it owing to the Salt or Tartar; for thoſe, when ſeparated from the Water and Oil, cryſtallize, dilute not, but ſtimulate. Nor, 3. Is it owing to the Earth; for that, when ſtript of its Moiſture, is a thick, ſolid, inactive Maſs. Therefore it muſt only be the *Water* in theſe Liquors which dilutes and furthers Digeſtion. It's true, a Mixture of ſaline Principles with the Water, makes it dilute more forcibly: But then conſider firſt, that all Stimulants exert or ſtir up Nature above her ſelf; they excite in the Fibres, a Force ſuperior to their ordinary Courſe of Action, or the natural Exertion of their Strength; but this weakens and wears out their Springs ſo much ſooner. When the Stimulation ceaſes, they relax, fall back, are languid and faint. To rouze up therefore and maintain this preternatural Vigour, we are neceſſitated to continue the Courſe of ſtimulating Liquors, to facilitate and perfect each Digeſtion: When this ridiculous Method commences in Youth, Brandy will be too weak a Dram in Manhood, and rectified Spirits will be but cold Stuff in the Decline of Life. As for old Age, he needs not be ſolicitous to provide againſt that, except for a Coffin, a Stone or Turf. Whereas ſmaller, more weak or watry Potables, uſed in the Morning and Meridian of Life, renders a moderate Glaſs of Wine, the cheriſhing and acceptable Milk of old Age, which preſerves the Lamp of Life burning, as pleaſantly and comfortably, as we are then to expect. But,

2*dly*, The more to ſtrengthen our Argument, let us conſider what is neceſſary to make up the Nature of Stimulants. And, 1. They muſt be

The Requiſites of Stimulants.

ſo thin and fine, as to be capable of paſſing the Cavities of the Veſſels, and fixing themſelves in the Surfaces of the leſſer Veſſels. 2. They muſt be poſſeſs'd of ſuch a Degree of Acrimony, as they may be able to clear a Paſſage to, and ſeat themſelves in the Parts. 3. Tho' the Particles of thoſe acrid Bodies be minute and fine, yet muſt they be ſo large, as to have ſome extra-eminent Part; otherwiſe the Fibre and Veſſel would not be affected by it; and to have a fixt adheſive Part without any Extra-eminence is the Property of Food only. And if acrid Particles have not Points to be darted into the Surfaces of the Channels, they would only be of the Nature of the globular Parts of the Blood, which never give any Uneaſineſs. 4. Theſe pointed Particles muſt adhere with ſuch Tenacity, as they may be fix'd for ſome Time in the Parts.

To the Pungency and Acrimony of Wine and Spirits, I might add the Tenacity and Glueineſs of the earthy Parts of ſtrong Ale or Beer; which render them ſtill worſe Diluters than Wine. Therefore it's plain, that *Water*, fine Table Beer, or a little Wine mix'd with *Water*, are the beſt, moſt ſafe and wholeſome Diluters, and by far the fitteſt to promote the Digeſtion of Meat on the Stomach: Which is what I undertook to prove in the ſecond Propoſition.

Water alſo beſt promotes the ſecond and third Digeſtions and Nutrition.

But to come more home, let us apply what we have ſaid of the firſt, to the ſecond and third Concoctions or Digeſtions. Another Intention of Drink is, to promote the Comminution and Diſtribution of our ſolid Food, that it may be converted into the wholeſome Nouriſhment of our Body. But that we may have ſome competent Knowledge of this, let us briefly conſider, 1. The Nature of our nutritive Juices. 2. The Manner of Nutrition. 3. What Liquors will beſt and moſt probably anſwer this End.

The Nature of nutritive Juices.

For the firſt: Although the Chyle do fill the larger Veſſels, yet it cannot repair the Waſte of the Solids, being too groſs, crude and unprepared; but when broken, altered, rarified, mix'd, ſubtiliz'd, and fitted to paſs the ſmall Veſſels, by the Force of the Air in the Lungs, and that in the Blood, and the repeated Acts and Shocks of the muſcular Parts of the Body, till it be reduced to a ſubtile Liquid of the Nature of the nervous Juice, or *Serum*, which is inſipid, white, tenacious, and thickens by the Heat of the Fire, Spirit of Wine, or even an increaſed Heat and Agitation of the Humours in a living Body, which expreſs its Oil, and retain its Salt, whereby it becomes ſharp and unfit for Nutrition; and therefore if the Body be continued in good Plight, this formerly uſeful (but now hurtful) Liquid, muſt be ſent off by the Skin and Kidneys: And then there is a treble Neceſſity of new, ſmooth, ſoft, balſamick Chyle;

The Neceſſity of new Chyle.

Chyle; 1. To blunt the Sharpneſs of the Salts of the remaining Stock of Chyle. 2. To repair the Defect of Chyle in the Body; and 3. To reſtore the Abraſion and Waſte of the Veſſels; which both the Want and Sharpneſs of the other had occaſioned. This nutritious *Serum* put over a Fire, firſt thickens, then turns ſharp, and laſtly exhales, and leaves only an inſipid, light, fine and pure Earth behind. The ſame does the lymphatick Juice. It is of ſlow Motion in the Body, of a thin, penetrating, unctuous and viſcid Nature, of a ſmooth and inſipid Taſte, of a clear and whitiſh Colour, and exiſts univerſally over the whole Body: Perhaps alſo there is ſome Nutrition in the capillary arterial Tubes; for 1. The Chyle is neither too crude there, nor the Blood too thick, ſeeing it is capable of entering, and paſſing along thoſe ſmaller and finer conic Veſſels. 2. It has a ſlow Motion, ſlides gently along the Veſſels, contains fine enough Parts, and has ſufficient Time to be applied to the internal Surfaces of the containing Tubes, which are Requiſites eſſential to Nutrition. 3. This Blood has in it thoſe very nutritive Principles, and the Conditions neceſſary to Nutrition, and dilates the Veſſels, ſo as their Inequalities appear, and parts of a ſimilar Nature to thoſe abraded being preſent, and ready in the circulating Maſs, have an Opportunity of Attachment and Cementation to the Interſtices, where the Motion and Action of the Fluids had abraded and carried off the Particles, and caſt them into the Maſs of circulating Fluids, to be expelled the Body.

How Nutrition is perform'd.

Nutrition is performed in ſome ſuch manner as this: Theſe Juices thus attenuated and prepared, are forced forward into conic and elaſtic Tubes, *i. e.* from a broader into a narrower Channel, which reſiſts their Ingreſs and Motion: There the Humour endeavours to extend and dilate its Sides, whereby the nutritive Particles in a ſlow Motion, have the Advantage of an eaſy Appoſition and Application to thoſe Parts of the internal Surfaces which are moſt waſted, thineſt and unequal: The Action of the Veſſels at the ſame Time promotes the Adheſion, and firm Cementation of the new attached Particles to their Sides, where they are fixed till the conſtant Propulſions and Colliſions wear them off again; then they leave ſome ſmall Interſtices in thoſe Parts, where they adhered to the Veſſels, and conſtituted a Part of them; and this Loſs of the Subſtance of the Veſſels will ſtill happen, in all Parts of the Body, during Life; *i. e.* whilſt the Motion of our Fluids, or Action of our Solids remain; or the mutual Oppoſition of our Solids and Fluids againſt one another continues; and the more ſtrong and durable theſe are, the more Loſs do we ſuſtain. But even theſe abraded or loſt Particles are thrown back into a Liquor, which carries in it Abundance of ſuch ſmall Parts of the Nature of thoſe now abraded and loſt, but had been applied to thoſe very Interſtices, and with the like Force, whereby the Liquor endeavours to break the Veſſel; this Force fits and attaches thoſe ſtopp'd Particles in thoſe Cavities where they grow together as the former, and become a Part of the Veſſel; and ſo what was loſt, is eaſily and inſenſibly reſtored, and the Solids ſtill nouriſhed and preſerved, and will be ſo while the Matter, Preparation, and Appoſition thereof with the Force of Motion is the ſame.

What Drinkables beſt for Nutrition.

Let us now enquire what Drinkables are beſt, or fitteſt for this Purpoſe, and theſe we imagine can neither be: 1. Such as contain much Viſcidity, or groſs unattenuated earthy Parts, which increaſe the Bulk of the Body in the whole Habit, but make not this Addition to the Solids, but only extend their Cavities, and fill them with congeſted and ſtagnating Humours, which really weaken inſtead of ſtrengthening them. True Nutrition ſtrengthens and thickens the Veſſels, without adding Bulk or Load to the Body; but the other Repletion extends, relaxes, and weakens the Veſſels; for wherever there is true healthy Nouriſhment, the Food is diluted with a thin, fine, very ſeparable, and leſs attracting viſcid, or cohering Liquor, the Chyle is well prepared, its different Principles are kept without the Bounds of unhealthy Combinations, in a moving State, whereby, when the Blood equally attenuated and duly mix'd, by the repeated Actions of the Lungs, Muſcles and Veſſels, is brought to the excretory Ducts of the laſt, without thoſe Coheſions; and there the nutritive Parts being diſengaged, ſwimming at Liberty in a pure, well conditioned Vehicle, neither the Attraction of other ſimilar earthy Parts is ſuperior to the Motion of the Blood, nor to that Force wherewith they are applied, and fixed to the Sides of the Tubes; nor are they accompanied with, or entangled in a Slime, lying betwixt them and the Interſtices, to which they are to be attach'd.

But here there is a Viſcidity in the Liquors whereby their earthy Parts attract one another, and their Oil is groſs; this being the State of the Liquors they muſt communicate the ſame Taint to the Blood, which indiſpoſes it for a brisk, equal and healthy Motion, by which Viſcidity and languid Motion, (both favouring Formations of ſundry *Moleculæ* when thrown into the ſmall Veſſels where the Motion is diminiſhed ſtill more) the firſt will ſtill be neareſt the Sides of the Tubes; and the more fine and ſerous (wherein is the largeſt Share of the nutritive Particles) will keep in the *Axis*. Hence little Nutrition. But theſe Viſcidities encreaſing, they will ſtill diſtend, relax, and weaken the Veſſel, whence a Repletion, and little Nutrition or Increaſe of Strength: For the nutritive Particles being kept from the Sides of the Veſſels by the *Mucus* which lines them, they will be ground down ſmaller by each Circulation, till they be uſeleſs, and then either expell'd the Body, or made a part of that *Mucus*, being entangled in it. This is the Caſe of thoſe who make ſtrong Malt Liquors, ſtrong bodied Wines, or made Wines, their common Beverage; and at the ſame Time uſe little Exerciſe: But *Water* drunk affords the moſt liberal and beſt Diſtribution of Nouriſhment, begets the moſt true Strength, and leaſt unneceſſary Load of Repletion: It's true, 1. Table or ſmall Beer well made, fermented, and kept till it be clear, fine, and depoſited its groſs earthy Parts, is much of the Nature of *Water*; it's alſo more agreeable to the Taſte, more pungent to the Glands of the Mouth and Throat, and gently warms and ſtimulates the Stomach. Though Ale or ſtrong Beer have the above Effects on the rich, luxurious, idle and indolent, yet it's in ſome meaſure both Meat and good Drink to the laborious, healthy, and moiling Mechanick (provided it be drank ſeaſonably and moderately, nothing in the Conſtitution or Health forbidding it:) Its Viſcidities are by his great Labour, Force and Action, turned to his Nouriſhment; but the firſt cannot long indulge the Uſe of this Liquor, and enjoy his Health at the ſame Time.

2dly, Neither are ſuch Liquors as abound with Tartar, or naked Salts, (which give a *Stimulus* to the ſenſible Parts of the Body) the beſt for common Drink: 1. Becauſe they excite a greater attractive Force in the different Parts of the Blood, which hinders the full Attenuation and Mixture of the nutritive Parts with the whole Maſs. 2. Becauſe they give a Pungency to the Veſſels, which ſhortens their Diameters; ſo as the ſmall Veſſels admit leſs Blood into their Cavities, their Surfaces and Interſtices are not fully dilated and expoſed to the circulating Humours, ſo as their Waſte may be repaired. 3. The Nouriſhment which they carry into the Body, is not durable enough; they elevate the Spirits a ſhort Time, but quickly exhaling, they leave the Man faint and drooping; to take off which, he is obliged to repeat his Glaſs, till it become habitual to him; and can as ſoon ceaſe to live, as to be without it: Then indeed Life is very uncomfortable, if not a Burden. 4. All acid or ſtale Drinks are prejudicial to ſound Bodies, ſeeing they abrade and waſte the ſmall Veſſels; coagulate the Juices by their Pungency, beget a falſe Appetite, oppreſs the Body rather than nouriſh it, and contract alſo the ſmall Veſſels; hence many and dangerous Diſeaſes. But to lax and weak Habits, to the idle, ſtudious and valetudinary, the Tartar and pungent Salt of the Graſs, is doubtleſs of ſingular Service, ſeeing Malt Liquors cauſe Obſtructions, *Water* a Relaxation, and Spirits the Deſtruction of the whole Machine. But even here, Wine requires a Mixture of *Water* to prevent Indigeſtion, Gout, Stone, Gravel, *&c.*

Thus as I conſidered Ale in the laſt Paragraph as Food, ſo do I Wine (except thin and fine) as a Medicine in this.

Laſtly, In this Preparation and Diſtribution of the Chyle, all ſpirituous Liquors are improper, for their ſubtile Parts conſiſt only of Oil and Salt, neither of which nouriſh; but the Salts being volatile, exhale ſpeedily; part of the Oil (being incorporated with that in our Body) continues, which turning rancid thickens the Blood; the earthy Parts are moſtly too heavy to be brought over the Helm in Diſtillation: Their Salts contract and criſp the ſolid Parts of our Nouriſhment, prevent their due Digeſtion and Diſtribution, ſtimulate and corrugate the Veſſels, ſo as their Interſtices (which are many, from the Solidity, Action and Abraſion of the Salts) appear not, nor lie in the way of the nutritive Particles. Their more ſpirituous or volatile Parts in their Exhalation, made way for much of the watry Parts of the Blood to follow, and leave the reſt thicker and more diſpoſed to Coagulations. Therefore *Water*, or fine Table Beer, being of the moſt thin, ſeparable or ſmall Parts, and carrying the leaſt Oil, Salt, ſlimy Earth or attractive Spirits into the Blood to load the Veſſels, or lie between their Sides and the nutritive Particles, are beſt for Comminution and Diſtribution of our Food, promoting true Nouriſhment, Health and Strength. *Q. E. D.*

How ſimple Liquors ſupply the Waſte of the watry Parts of the Blood.

The fourth Intention of Drink is, *to ſupply the conſtant Waſte of the moiſt and watry Part of the Blood and Juices*, which are its thinneſt Parts, wherewith the Salts are mixed; which make it more ponderous. The Advantage of a due Fluidity of the Blood muſt be obvious to all, who know any Thing of the Nature of animal Bodies. For hereupon depend Circulation, Secretion, Nutrition and Evacuations, Health, Life, and Uſefulneſs; for neither its too great Thickneſs nor Diſſolution can long be attended with the three laſt. Now what Drinks are moſt proper to preſerve this healthy State of our Juices, will readily appear from this: All ſpirituous Liquors drunk too frequently (much more were they turn'd to common Drink) thicken the Blood, diſpoſe it to Coagulations and Stagnations. All vinous Liquors, drunk for ordinary, though they ſtrengthen the Fibres, partly by ſupplying them with a ſmall temporary Nouriſhment, but chiefly by ſtimulating them, yet they cauſe ſundry Combinations, Coheſions, and ſometimes Concretions in the narrow Canals, by overloading the Juices with ſaline, tartarous, or other acrimonious Parts (except prevented by Labour or Exerciſe.) Hence Gravel, Stone, Gout, arthritick Pains, Diſeaſes of the Head, *&c.* All fermented ſtrong Liquors made of Grain (if drunk often and in large Quantities) carry into the Blood much coarſer, tenacious, earthy Matter, groſs Salts and Oil, which render the Blood viſcid, indiſpoſe it for Motion, incapable to paſs the Strainers without fouling the Glands, and afford but ſmall Secretion.

It is true, too great a Diſſolution of the Blood is alſo dangerous, but this is moſtly the Effect either of Idleneſs, or an indiſcreet and exceſſive Uſe of volatile alkaline Spirits or Salts, as of *Sal Armoniac*, Hartſhorn, *Sal volatile*, &c. or too much Freedom with Cordials, as Saffron, diſtill'd Cordial Waters; or an exceſſive Uſe of weak *Tea* drunk with Saffron, *Sal volatile*, &c. which have ruined many a good Conſtitution, among the fair Sex eſpecially. Therefore ſuch Liquors as conſiſt of the leaſt Parts, without ſudden Exhalation or Rarefaction of the Blood, and of Particles ſeparable with the ſmalleſt external Force, diſpoſed to a ready Motion, and have the leaſt Taſte of Viſcidity, earthy, ſaline, or other heterogene Parts, is the fitteſt to ſupply the Conſumption of the watry Parts of our Blood; and ſuch is *Water*, &c. *Q. E. D.*

How ſimple Liquors tend to long Life.

In the laſt Place, whatſoever Drinks *preſerve the Motion of the Blood, in the moſt eaſy, natural, ſteddy, and even Manner, greatly contribute to the prolonging of humane Life.* But all ſpirituous, vinous, and ſtrong fermented Liquors, ſtimulate the Veſſels of the Drinker, accelerate the Motion of the Blood, ſometimes even to a Rapidity. Therefore, although Intemperance were exempted from all Accidents, though it ſhould never occaſion either acute or chronic Diſeaſes, yet it ſhortens Mens Days, as it ſtimulates the Veſſels, raiſes the Motion and Velocity of the Blood; for though it is impoſſible to preſerve humane Life without Circulation, yet the more accelerated the Motion of the Blood is, old Age and Death ſteal on ſo much the ſooner, and the Years to which any Man might attain by Temperance, will be in Proportion to the Quickneſs of his Pulſe; for while a Man's Body grows, the Force wherewith the Heart impells the Blood into the Veſſels, is ſuperior to their Reſiſtance, and when the impelling Force of the one, and the Reſiſtance of the other, are equal, he continues at a Stand; but as the Veſſels become thicker, more compact and ſolid; then they get the Advantage of the Heart's Force, till from its Rigidity it become very weak, ſcarce able to expel its Contents, the Veſſels alſo become more inflexible, till their Reſiſtance quite overpowers the Heart; hence the quicker the Pulſe beats, the ſooner do the Veſſels become ſtiff and inflexible: Thus, allowing 70 Years for the Age of a Man, or A, and 60, or B, Pulſes in a Minute; let C be the Number of Pulſes of a healthy Perſon in a Year; then C B A, = 2209032000, the Number of Pulſes in his whole 70 Years. But if any Man by drinking ſpirituous Liquors immoderately, raiſes the Circulation to ſuch a Rapidity, as may cauſe 75 or D

Pulſes in a Minute, then $\frac{CBA}{CD} = 56$, is the Number of Years wherein ſuch a Man will run out the ſame Number of Pulſes. Thus his Pot and Companion ſhall bring him 14 Years ſooner to his Grave, than the temperate Man. But ſmall Potables, not quickening the Wheels of the Machine, not contracting or ſtiffening the Veſſels, nor unavoidably haſtening the Termination of Life, are the beſt to preſerve an eaſy, ſteddy, natural and even Motion of the Blood, and conſequently are the beſt Liquors to prolong Life. *Q. E. D.*

What I have ſaid might be proved from the Health and Longevity of many in both ancient and late Ages, in ſundry Parts of the World, who have contented themſelves chiefly with *Water*; ſuch as the late *Carybians*, *Apachalites*, *Canadians*, *Cauſabians*, *Braſilians*, *Japaneſe*, the Inhabitants near *Davis's Streights*, the People of *Sumatra*, *Java*, of the *Mulattoes* of *Florida* and *Juculan*, &c. But I haſten to the next and laſt Head, *viz.* The Reaſon why the ſame Eatables or Drinkables, are not equally agreeable, wholſome and nutritive to all Conſtitutions.

AN ENQUIRY INTO THE REASONS

Why the ſame FOOD is neither equally nor univerſally agreeable nor ſerviceable to all CONSTITUTIONS.

In a LETTER *to the Right Honourable and Truly Noble,*
MARY *Lady* MALTON.

MADAM,

IT is with the utmoſt Pleaſure imaginable, that I have an Opportunity offered of attempting the Reſolution of a Query to your Ladyſhip: Though I am not unapprized how difficult it is to anſwer one, in whom Nature gives the Bluſh to Art; one ſo well acquainted with, and ſo much Miſtreſs of our beſt mechanical Writers. But a Deſign ſo ingenuous cannot fail to be acceptable to one who abounds with an innate Love of Candour, and whoſe whole Life and Actions are the moſt convincing Proofs, and undeniable Inſtances of true Nobility, and greateſt Virtue, and who eſteems it her higheſt Ambition and greateſt Glory, to relieve the Poor, Afflicted, Pained, Miſerable, and Diſtreſſed; who accounts a Day loſt, wherein an Opportunity of doing Good to ſuch offers not it ſelf; wherein you imitate not only the Practice of ancient Kings and Princes, but the greateſt and brighteſt Example that ever was in the World, who *went about doing Good.* However, if my preſent Eſſay come not up to my Deſign, the World muſt conclude me right in chuſing ſuch a Patron.

1. The Query propoſed affords another Conſideration to be examined firſt, and that is, *What are the Cauſes of the Variety of humane Conſtitutions*, the Reſolution of which both implies and expreſſes the former.

The Definition of a Conſtitution.

2. A Conſtitution, or Temperament, is *a particular Structure, Conformation, or Elaſticity of the Solids, with a peculiar Diſpoſition of the Blood, whereby it falls into certain Combinations or Coheſions more in one Perſon than another of a different Conſtitution, whether into Phlegm, Choler, Melancholy*, &c. or it is the different Qualities of the ſeveral Humours and Diſpoſitions of the Parts of the Body, which makes a greater Difference in the Degrees of Health, as well as the Difference of Ages, Sexes, and Non-naturals; all which make a Difference of Perfections in Mens Actions, and a Latitude in Reſpect of a healthful Diſpoſition of Body; and yet People of all Conſtitutions may both be ſaid and eſteemed to be in Health, although they differ in its Degrees and Perfection of Action. This Knowledge of the Diviſion of Conſtitutions is neceſſary to all, who in the leaſt meddle with the Practice of Phyſick, for it inſtructs them what Diſeaſes are moſt likely to ariſe in each Conſtitution, thoſe of every one being peculiar, and therefore to be foreſeen. And although our Predeceſſors have handed us down a very dark and unintelligible Account of the Cauſes of thoſe different Temperaments, yet this ſhould not hinder, but excite our ſedulous and rational Enquiry into the Reaſons of this Variety, without amuſing our ſelves with their Jargon of Elements, Cardinal and occult Qualities, *&c.*

Temperaments, how divided by the Antients.

3. Temperaments were divided by the Antients into nine, *viz.* four Simple, Hot, Cold, Moiſt and Dry; and four Compound, Sanguine, Cholerick, Phlegmatick, and Melancholy; and one Temperate, wherein they imagined a juſt and due Proportion of all the four firſt Elements of Fire, Air, Earth and Water; but if one or two of thoſe Elements have a greater Proportion to the reſt, than they reciprocally bore to them again, the Perſon was ſaid to be of that Temper. *E. gr.* Did Earth bear a greater Proportion than any of the other three Elements? Then ſaid they, it conſtitutes a Melancholy Temperament. Did Fire

prevail? then he is cholerick, *&c.* They alſo divided Conſtitutions into thoſe *ad pondus*, and thoſe *ad juſtitiam*; in the firſt there is ſuch a juſt Proportion of all the Qualities which exiſt in different Conſtitutions, ſo as none of them exceed the other in Quantity: In the laſt there is a Diſproportion of the Humours, as to one or more Qualities, which yet are agreeable to, and hinder not the peculiar Actions of that Body.

What we underſtand by their Hot, Dry, Cold, Moiſt, *&c.*

4. But we ſay that Body is hot, whoſe Humours move briſkly, are ſharp and dry, its Bowels firm, its Veſſels ſtrong and contracted. On the contrary that we repute Cold, whoſe Solids are looſe and flaccid, and Fluids ſoft and watry, move with a ſlow Pace, the Body liable to Tumors, and his Mind to Puſillanimity. That is a dry Temperament, which is naturally exceeding thin and meagre, whoſe Veſſels are much contracted, its Fluids few, and thoſe almoſt acrid. A moiſt Conſtitution has a languid Circulation, Fibres lax and weak, Blood watry and inſipid, it differs little from the cold one. —— The cholerick is much like the hot and dry, it is lean, has little but firm Fleſh, its Veins are prominent, the Pulſe is quick. —— Sanguine People have much and ſoft Fleſh, their Veins are blue, large and diſtended with well conditioned Blood. —— Phlegmatick have much white and ſoft Fleſh, their Blood-Veſſels are very ſmall and almoſt imperceptible. —— Melancholicks are very dry, lean, black, and ſwarthy coloured, their Blood is thick, but well mixed, and not readily changed.

The State of Solids and Fluids in a ſanguine Conſtitution.

5. In ſanguine People the acrimonious Salts of the Blood are either not plentiful enough, or they are imperceptible, being entangled in either the earthy or ſulphureous Principles of the Blood; and all oily Particles being large, hooked into one another, full of ſmall Branches, they wrap up, encloſe and entangle all the other Bodies with which they are mixed, and become the predominant Principles in the Blood. This Sulphur being fat and ſweet, muſt render the whole Maſs of Blood balſamick, ſoft, ſweet and fat, by covering and fixing the ſaline and earthy Parts of the Blood, wherein it is aſſiſted by the Phlegm. The Temper of this Blood being fat, its Maſs in a natural State will afford much Sweat, Juice and Lympha, full of animal Spirits, and adapted for a good Plight of Body, and Nouriſhment of the ſolid Parts, which enables the Man to perform his Actions and Motions with Eaſe, Speed, and Pleaſure. The Fatneſs, Smoothneſs, and Oylineſs of ſuch Mens Blood begets a cheerful Countenance, engaging the Reſpect of Spectators; from this Plenty of Oil, without any ſenſible Acrimony which may ſtimulate, they are full bodied, have a white Skin, interſperſed with a beautiful red Colour. From this Abundance of Juices their Pulſe is full and regular,

and all the Recrements afforded therefrom are well proportioned both in Quantity and Quality.

Cauſes of a ſanguine Conſtitution.

6. The Cauſes of a ſanguine Conſtitution are briefly, 1. A greater Strength of the Stomach, Bowels and Meſentery, to prepare and force the Chyle into its Veſſels, and regularly to expel the Evacuations. 2. The Numerouſneſs and Openneſs of the Lacteals. 3. The natural Strength and elaſtick Force of both the lacteal Veſſels and meſeriack Glands. 4. The juſt Proportion of all the Secretions over the whole Body to one another. 5. The placid State, and ſmooth Undulation of the Fibres from the Softneſs and Smothneſs of the Blood. 6. The Prevalency of a ſulphureous Principle in the Blood, before the Chyle was mix'd with it. 7. The Freedom of Stomach and Juices from much Acrimony, Viſcidity, Seroſity, or grumous Earth.

The State of Solids and Fluids in a cholerick Temper.

7. When the acrimonious Salts of the Blood are ſet at Liberty from its other Principles, eſpecially from the Earth and Sulphur, and is ſo diluted by the Phlegm, as to ſeparate the Oil which entangled the other Bodies wherewith it was mix'd, then this acrimonious Salt is the ſuperior Principle of the Blood, which by the Sharpneſs of its Particles, and Velocity of its Motion, and Colliſions with other ſolid Particles exiſting in the ſame Fluid, it forcibly acts againſt the Sides of the Veſſels, carries off Part of them, ſtimulates the Fibres, ſo as here the Blood errs not in Quantity, but in Quality, and this Quality conſtitutes the Cholerick, or hot and dry Temper. It is hot becauſe the Circulation is quicker in equal Times than in the ſanguine. It is dry becauſe the Blood has leſs Phlegm, Perſpiration being greater here. It is evident that Blood thus conditioned cannot afford ſuch ſweet and ſmooth Recrements as the laſt, therefore the Body is not ſo fleſhy and fat, the Pulſe more quick, from the elaſtick Force of the Fibres carrying on a brisk Circulation. The nervous Juice ſtrain'd off from this Blood is not ſo moiſt as that ſeparated from the ſweet oily Blood, therefore muſt the animal Spirits of the Cholerick be exceeding fine and ſubtile, endued with a free Motion; and alſo the Veſſels of the medullary Part of the Brain will be pliant.

Cauſes of a cholerick Temper.

8. A cholerick Conſtitution is occaſioned by, 1. A Largeneſs and Patency of the Glands of the Liver, where much Bile is ſeparated from the Blood, pour'd into the Bowels, and mix'd with the Chyle. 2. The Predomination of Acrimony in the Blood. 3. The Irritability of the Fibres and Solids, and their Suſceptibility of a *Stimulus*. 4. An Elaſticity and Agility of the Fibres and Solids. 5. A free Perſpiration, carrying off the more ſerous Parts of the Blood. 6. A greater Diſpoſition of the Blood and ſubtle Spirits to Motion, &c.

9. Give

How the Temper of Body affects the Mind, or alters it.

9. Give me Leave to take Notice here, before I proceed to the other Conſtitutions, that not only the Cauſes of different Temperaments of Body are explicable from the different State of their Solids and Fluids, but alſo their different Tempers of Mind may in ſome Meaſure be accounted for from the ſame; for the Recrements of ſanguine Peoples Blood being well proportioned both in Quality and Quantity, ſweet and well temper'd, the nervous Juice will be ſo unctuous as to make the ſmall Veſſels of the Cineritious, or external Part of the Brain very pliant, that the animal Spirits eaſily convey to them the Impreſſions made by external Objects upon the internal Organs of the Senſes. Men whoſe nervous Juice is ſulphureous (and therefore porous) come eaſily at the Knowledge of ſuch Things as are offered to their Mind through their Senſes, and their Ideas will leave an abiding Impreſſion thereof on the Medullary, or white Subſtance of the Brain, which cauſes a great Vivacity, a retentive Memory, and a ſolid Judgment. For the Nature of their animal Spirits being ſoft and ſmooth, their Motion regular, neither rapid nor ſlow, their Waſte not ſpeedy, the Idea raiſed by external Objects upon ſuch Organs of Senſe will neither be too ſwift nor ſlow, but make a deep and durable Impreſſion, therefore the Judgment has the Advantage of Rumination, Reflection, and Reaſoning. The Softneſs of the Blood, the Smoothneſs and Plenty of the nervous Juice, the pliant Undulation of their Spirits, muſt make them pleaſant, chearful and gay, in Love with what pleaſes their Senſes, the Titulation and Gratification whereof are often ready to ſeduce them, unleſs they are under Command of Reaſon and Religion. This Pleaſantneſs and Gaiety of Temper renders them civil and obliging to Equals, grateful to all, and compaſſionate to the Miſerable: And if to this Temper a good Education be added, it makes them alſo wiſe, learned, polite and ſociable, all which challenge a Regard, ſo as ſuch Men eaſily come at their Ends, or are ſucceſsful in their Enterprizes. From the Subtility and Velocity of the animal Spirits of the Cholerick, the Impreſſions of external Objects upon their Organs of Senſe are ſpeedily conveyed to the common Senſory; therefore muſt ſuch Men have a great Penetration. But becauſe their Juices are diſpoſed to a quick Motion, they cannot reflect upon their Ideas with that Steddineſs that is neceſſary to perceive wherein they agree or diſagree, therefore make they wrong Judgment, and reaſon falſely, eſpecially when their Imagination and Vivacity are raiſed. From their haſty way of thinking, the Traces of Impreſſions of external Objects made upon the Brain prove ſuperficial, and are preſently defaced by new ones. From the Superficialneſs of thoſe Impreſſions, and their plentiful Succeſſion of new Ideas, they are apt in Converſation to fly

from one Subject to another; and from Want of Attendance and Reflection upon their Ideas, ſo as to form a right Judgment, they are tenacious of their own Opinion. The ſuperficial Impreſſion made by Objects will occaſion a very ſlippery Memory: Their Vivacity preventing them the Advantage of examining the Agreeableneſs or Diſagreeableneſs of their Ideas, makes them inconſtant in their Reſolutions; for the ſame Reaſon are they conceited, and not to be convinced without great Difficulty. From the Briskneſs of their Circulation warming the Body, and their Imagination, they are apt to be paſſionate.

From the like Reaſoning might I ſhew with *Vicuſſenius*, in the *Tranſactions of the Royal Academy of Sciences*, why Ideas raiſed by external Objects, in the Minds of the Phlegmatick, are languid and eaſily defaced; why their Judgment is ſeldom very penetrating, or their Memory retentive; why their Ideas are of ſhort Continuance; why ſuch Men are not ſhaped out for brave Actions, or if they undertake them, are they likely to prove ſucceſsful; nor why curbing their Paſſions is no great Glory, their Conſtitutions not prompting them ſtrongly to the Gratifications of Senſe and Deſire; why Honeſty in them is little Virtue, for Fear of Events frightens them from what may be of dangerous Conſequence, *&c.* And why Ideas excited by the Preſentation of Objects to the external Senſes of the Melancholick are ſlowly conveyed, but make deep Impreſſions on their Brain; and though they come not ſo quickly at the Knowledge of Things, yet the Traces of their Ideas are too ſtrong and deep to be quickly defaced; therefore have they Time to ruminate on them, and examine wherein they agree or diſagree, on this Account have they a ſolid Judgment, a retentive Memory, and reaſon cloſely, *&c.* But this being done at more Length already, I proceed,

State of Fluids and Solids in a Phlegmatick.

10. When the Salt, Oil, and Earth in the Blood happen to be diluted with too great a Quantity of Water, whoſe Particles are ſmall and pliant, they eaſily and plentifully inſinuate themſelves into the Pores of the Particles of the other Principles, ſeparate and diſſolve them, and ſo thin the Blood. This is the Caſt of phlegmatick Peoples Blood, who are therefore of a cold and moiſt Temper. From this Prevalency of Water over the other Principles this Phlegm is ſo united with the fine Oil, and ſo attenuates it, and diſſolves the Earth and Salt, that the Juices ſeparated from ſuch a Blood muſt be fat and ſweet, but much more ſerous than thoſe of the ſanguine; therefore are phlegmatick People often fat, their Skin white, Countenance mild, Pulſe ſlow, their animal Spirits are too much ſoaked and diluted with Water, therefore are they not ſo ſtrong, active, laborious, and indefatigable as others.

The Fluids of the Phlegmatick bear a greater Proportion to their Solids, therefore muſt the laſt act with leſs Force, their Fibres are weaker, and not ſo firmly attach'd, and over lubricated with the redundant Water and Oil in the Blood; their Bowels and Veſſels are weaker, therefore leſs able to bear much Exerciſe or hard Labour.

This Redundancy of Phlegm in them is from the Inability of their Solids to act upon, reſiſt and ſeparate throughly the whole Maſs of Fluids, and to extricate the Principles from one another. For from the due and full Attenuation and Mixture of thoſe ariſes the red Colour of the Blood; and this Mixture is not attainable but by a vigorous Reſiſtance of the Solids, at leaſt equal to that of the Fluids. It is this Laxneſs of the Solids, and ſlow weak Motion of the Fluids, which occaſions a copious Secretion and Repoſition of Oil and *Serum* in the adipoſe and lymphatick Veſſels; hence a groſs and bulky Habit of Body; and becauſe both the Fibres want a greater *Stimulus*, and the Nerves a ſubtile Juice, to raiſe a Briskneſs and Vivacity in the Muſcles, therefore is the Countenance ſimple and mild: The Fibres are lax from their leſſer Degree of Coheſion in their conſtituent Parts from the much *Serum* in the Body, which ſtretches and diſtends the Veſſels and Fibres ſo as they touch on ſmaller Points. This Plenty of warm, ſoft *Serum* leſſens the Attraction of the conſtituent Particles of the Fibres.

Cauſes of a phlegmatick Conſtitution.

11. A phlegmatick Conſtitution ariſes from, 1. The Prevalency, or too great Proportion of the watry Parts of the Blood, to its other Principles. 2. The Laxneſs and Weakneſs of the Solids. 3. The ſmall Veſſels are loaded with a warm, ſoftening, diſſolving *Serum*; or Viſcidities furr up and obſtruct their Cavities.

State of the Solids and Fluids in a melancholick Temper.

12. When the terreſtrious Parts of the Blood prevail over its Sulphur, Oil and Salt, *i. e.* when Earth exceeds its due Quantity in Proportion to the reſt, it conſtitutes a Temper cold and dry, or melancholick. Here the Texture of the Blood is too thick; its recrementitious Juice of too denſe or thick a Conſiſtence, and leſs fluid than thoſe of other Conſtitutions. Such Blood muſt be attended with a very muſcular Body: For it being thick and not over-diluted with Phlegm, affords but few recrementitious Juices, and what it yields are not over-thin, ſo as the Parts nouriſhed by it muſt have more Conſiſtence and Vigour than thoſe of the other Tempers; and from the greater Strength of the Solids they are generally more healthful; for the ſame Reaſon their Pulſe, tho' ſlow, is ſtrong: Their Solids bear a greater Proportion to their Fluids: The conſtituent Particles of their Fibres are connected more ſtrongly, and cohere firmly, either becauſe they touch in larger Surfaces, or the Particles being more ſimply terreſtrious, attract more powerfully: Hence

they are more ſtiff and rigid, better for Labour, but leſs agile and elaſtick. The Strength and Rigidity of theſe Peoples Fibres ariſe from the Thickneſs, Cloſeneſs, and good Mixture of their Blood, which is neither eaſily altered nor changed, though Earth be the predominant Principle in it, and all our Solids are conſtituted of Earth: Therefore its greater Proportion in our Juices muſt occaſion ſtrong and ſtiff Solids. The Thickneſs, Stiffneſs, and Compactneſs of this Blood, diſpoſe it more to fall down upon, and load the *Viſcera* of the lower Belly, and ſo conſtitute a Temper truly and properly melancholick, heavy, penſive and ſlow. This Thickneſs of the Blood is diſcoverable from an Iron-like or blackiſh ſwarthy Colour, and great Strength of the Body, from a ſtrong and ſlow Pulſe: The Man's Intentneſs upon the ſame Ideas, his Gravity, Choice of a ſolitary Life, a frequent Senſe of Weight and Oppreſſion of the abdominal *Viſcera*, &c.

Cauſes of a melancholick Conſtitution.

13. The Cauſes of this Conſtitution are, 1. The Abundance of earthy Parts in the Blood, and its Thickneſs and Dryneſs therefrom. 2. The Strength and Conſiſtence of their nervous Juice. 3. The Stiffneſs and Rigidity of their Fibres and Solids. 4. The Diſpoſition of the Blood, from its Thickneſs to load the Bowels of the lower Belly.

How Diet affords us the Pathognomonick Signs of each Conſtitution.

14. Having thus taken a ſhort and general View of the State of Solids and Fluids peculiar to each Conſtitution, the immediate Cauſe thereof, with the particular Symptoms of each, and accounted for thoſe Signs; let us next deſcend to a more ſtrict Examination of both the conſtituent and accidental Parts, with the mediate Cauſe of this Variety. Give me Leave only to premiſe in general, that our very Diet (though little regarded) affords us ſome certain Indications and Proofs of each Temperament. Thus Honey, and all ſtimulant, ſaline, and abrading Things diſcover and diſturb the Cholerick. An aqueous, ſoft, inſipid, or viſcid Diet ſwells up the Phlegmatick, and diſorders it. All ſtrong Evacuations, much Faſting, or an obſtinate Courſe of terreſtrious Food, loading the abdominal *Viſcera*, cauſing a ſmall dull Pain, Weight, Oppreſſion, and Reſtleſneſs, ſhew the Body to be Melancholick. Long Feeding on lubricating, balſamick, very nutritious Food, with Neglect of Exerciſe, will beget ſeveral Diſeaſes in the Sanguine, from a *Plethora*.

How the Solids vary in Conformation and Structure.

15. The Solids alſo vary in their peculiar Conformation or Structure. For if the Heart be larger and ſtronger, and its Veſſels endued with a more elaſtick Force in Proportion to the reſt of the Body, the Blood muſt be better mixed and attenuated, and thrown more forcibly about the Body, and the Heart bears a greater Proportion to the other Parts, than they bear to it. This ſuperior Strength in the Heart, and its Veſſels, I know, helps to ſecure one againſt Polypus's, and other Excreſ-

The Force of the Heart greater in ſome.

cencies on the Inſides of thoſe Veſſels, but at the ſame Time expoſes the Heart more to Calloſities and Opiſication in the Decline of Life.

Bilious Secretions more copious in others.

16. Some People have a larger Liver, and its Veſſels wider and more open, therefore have they a greater Quantity of Bile ſeparated from the Blood, and poured into the *Duodenum*, and mixed with the Chyle. Where the Veſſels of this Viſcus are ſtrong and patent, the Body is leſs liable to obſtinate Jaundices, Schirrus's, and Obſtructions, *&c.* but on that Account it is more expoſed to bilious Cholicks, Gripes, Looſeneſſes, and other Diſeaſes produced by much Bile.

Some have ſtronger Stomachs and Bowels than others.

17. Such whoſe Stomach and Inteſtines are ſtronger in Reſpect of the reſt of the Body, have more, better attenuated and prepared Chyle, and more powerfully expelled the Inteſtines: Hence the Body is better ſupplied with Nouriſhment, and leſs liable to Diſeaſes from Flatulency, Crudities, and Indigeſtion, Cholicks, Gripes, *&c.* but more expoſed to gnawing Pains, and Convulſions of the Parts, when they are much irritated by acid Humours, *&c.*

Some have their Kidneys more ſtrong and elaſtick.

18. The Veſſels and Glands of ſome Peoples Kidneys are ſtrong and more elaſtick than thoſe of others, whereby they perform their Office better, and the Body is leſs grieved with bloody Urine, mucilaginous Diſcharges, or Stones and Gravel, *&c.* I might mention many more Differences of the Conformation of the different Parts in ſundry Perſons, if it were needful.

Peoples Solids differ in Reſpect of their Tenſion.

19. But the Solids differ not on this Account only, but alſo in Reſpect of their different Tenſions: For ſome People have lax and weak Fibres and Veſſels, others have them more elaſtick, agile, and diſpoſed to Action; others have them ſtronger, but a great deal more ſtiff and rigid, but leſs quick and active; and ſuch as the Fibres are, whether lax, weak, elaſtick, ſtiff, *&c.* ſuch muſt the Veſſels conſtituted of them be. Thus a Veſſel compoſed of lax Fibres muſt be weak, *&c.* that of ſtrong Fibres ſtrong, *&c.*

The Definition, Cauſe, and Effects of a lax Fibre.

20. A lax Fibre is that nervous Thread, whoſe conſtituent Particles attract each other in a lower Degree, or cohere not ſo firmly to each other, either becauſe the cementing Power is leſs, or becauſe the component Particles touch in leſs Points. *Corol.* 1. Hence we ſee that where the Fibres are either conſtantly ſoaked in much ſoftening, tepid *Serum*, ſo as they have the Force of their Cement diminiſhed, or where the conſtituent Particles of a Fibre touch on leſſer Surfaces, that Fibre muſt be weak. *Corol.* 2. The Veſſels formed of a lax or weak Fibre muſt likewiſe be lax and weak. *Corol.* 3. That the Mixture and Secretions of the Juices depending on the Force of the Solids, where theſe are weak, the other muſt be imperfect, and Seroſities remain in great Plenty

in the Body. *Corol.* 4. That a lax Fibre muſt alſo be a very ductile one, and the Veſſels conſtituted of ſuch capable of great Diſtention, and Lodgment of Matter of any kind; no Wonder then to ſee ſuch often languiſhing in Dropſies, Tumors, *&c.*

The Definition and Effects of an elaſtick Fibre.

21. By an elaſtick Fibre I underſtand that inherent Force in a Fibre, whereby when it is ſo bended, extended, or compreſſed, as that its conſtituent Parts are lengthened out, but not diſcontinued, broken or ſeparated; when this Extenſion or Compreſſion ceaſes, the Fibre re-aſſumes, or ſprings back to, its former State with great Velocity; this Fibre is agile, performs its Actions or Motions more perfectly, eaſily and ſpeedily in equal Times; or it is a nervous Filament, which, though it be ſmaller than the ſtiff or rigid, yet have its Particles a firmer Coheſion than thoſe of the lax. *Corol.* Becauſe the Tendency of its Particles to each other is greater, therefore will it act with a greater, quicker, and more ſenſible Reſiſtance againſt the Fluids contained in the Veſſels conſtituted of it.

The Definition and Effects of a rigid Fibre.

22. A ſtiff and rigid Fibre is that Thread, which though it acts with greater Strength, yet it moves with leſs Velocity, or it has a lower Degree of *Niſus Reſtituendi*; becauſe it is conſtituted of more or larger Particles than the two former, either the Attraction of its Particles is ſtronger, or their Cementation to one another firmer. *Corol.* 1. Becauſe the Fibres are ſtiff, the Veſſels will be leſs flexible, their Cavities narrower and ſhorter. *Corol.* 2. The Stiffneſs of the Fibres muſt prevent the large Extenſion or Dilatation of the Veſſels. Hence no Humours, or except ſuch as are very grumous and dry, can find any Lodgment or Settlement in them; but when a Collection of Humours fall upon a Part, their more fluid Parts muſt be expell'd, and more earthy, thick or ſaline will remain. Therefore are Perſons of this Conſtitution more liable to Cancers and Schirrus's. *Corol.* 3. Becauſe theſe Fibres are very ſtrong, their Juices muſt be thicker and drier; for the more ſerous are powerfully expell'd. *Corol.* 4. Becauſe they act with leſs Velocity, the Pulſe which depends upon their Motion muſt be ſlower.

A lax Veſſel what.

23. A Veſſel is ſaid to be lax, either, 1. When the Attachments or Connection of its Fibres with one another is ſuch, as may be ſeparated by a Degree of Motion, either little or no more than what is neceſſary in a State of Health. Or, 2. When the Veſſel is ſo diſtended and dilated that the connected Fibres are either ſtretch'd beyond their Spring and Tone, or their Interſtices ſo large, as the more aqueous Parts of the Blood make their way through them, and over-lubricate the Fibres, ſo as to leſſen their coheſive Force. 3. When their contained Blood and Juice is ſluggiſh and inactive, from the Abundance of *Pituita* mix'd with it:

Or laſtly, when they have not been exerted, and put forth on Action, but laid by and become reſty.

A weak Veſſel what.

24. A Veſſel is ſaid to be weak, when the Fibres conſtituting it are ſuch, and it is at the ſame Time duly filled with Fluids: It is reputed weak, when loaded with a *Plethora*, or Fulneſs of good conditioned Blood, ſtretching it beyond its proper Tone; but more eſpecially if thoſe Humours, or that Blood be viſcid, thick, or ſuch as requires great Reſiſtance from the Veſſels, to continue it in due Motion and Mixture.

An elaſtick Veſſel what.

25. A Veſſel is ſaid to be elaſtick, when its Fibres are endued with a ſtronger coheſive Power, and greater Attachment in Proportion to its Bulk, and is capable at the ſame Time to act with a greater Velocity and Strength.

A rigid Veſſel what.

26. A Veſſel is taken for ſtiff and rigid either when, 1. The Fluids running through it do preſs upon and diſtend its Sides, ſo as the ſmaller Veſſels in its Coats are deprived of their Fluids, and thereby degenerate and grow together into an impervious Solid or Fibre, but not of the ſimpleſt Kind, and will act with a Force equal to all the ſimple Fibres united, and ſtripp'd of the Reſiſtance of their contained Fluids. Or 2. The intercurrent Fluids thicken and adhere to the Sides of the Veſſels, and deſtroy their Cavities.

Why elaſtick Fibres act with greater Velocity than the ſtiff.

27. The Reaſon why a very elaſtick Fibre acts with a greater Velocity, or in leſs than equal Times with a rigid, is, 1. The Fluids in its Nerves are finer. 2. The Tubes themſelves are more flexible. 3. The Blood is not ſo earthy and thick.

Elaſticity how proportioned.

28. The Elaſticity of all Fibres is proportioned to their Strength, and their Strength is adapted, 1. To the Quantity of Matter they contain. 2. To the Coheſion of that Matter; for where the coheſive Power is weak, they are capable of being readily ſtretched and broken; when this Power is too great, they are leſs flexible, their conſtituted Veſſels more narrow and ſhort, and their Reſiſtance of the free Motion of the Fluids too great, becauſe of their Tendency to come near to one another.

Cauſes of a lax Fibre.

29. The Cauſes of lax Fibres and Veſſels are, 1. The Alteration of our Food into the Nature of ſound Juices obſtructed; and this proceeds from too great a Sluggiſhneſs of the Solids, and waſte of the more attenuated and thinner Fluids; or from the too much Tenacity of our Food, whereby it reſiſts and overpowers the Force of our Solids, which ſhould duly alter, mix, and attenuate them. 2. The too ſlender Coheſion of the conſtituent Parts of the Fibres to one another, ariſing from too languid a Motion of the Fluids, and this from a Defect of muſcular Motion. 3. A too great pulling of the Fibre, till it is ready to ſeparate or break.

This lax Fibre is capable of great Dilatability, even to a Prodigy; the Manner whereof is no more inexplicable than the Cauſes. For the Blood moving ſlowly, the nutritious Particles have the Advantage of an eaſy Attachment to the Sides of the Fibres or Veſſels, which Particles being fix'd, the conſtituting Particles of the Fibre ſtill dilating, giving way, and receding from their Contact, they ſeparate, and the formerly attached Particle having now the ſame Degrees of Coheſion comes in betwixt the two juſt now ſeparated, and is attracted by, and attracts both, and the ſlender Coheſion of the Particles of the Fibres, and their Weakneſs in Infancy and Childhood, and their making Room for the Interpoſition of new ones betwixt them, is the true and explicable Cauſe of the Child's Growth, as well as the Extremities of all the Veſſels being Fluids. By this Means a Fibre may be monſtrouſly dilated.

Cauſes of an elaſtick Fibre.

30. The Cauſes of an elaſtick Fibre are, 1. A too free and frequent Uſe of Foods conſiſting of ſeparable and volatile Parts, or Oils and Salts, with ſome Earth ſo prepared before we take it, that it reſembles the Juices in a ſtrong and healthy Body, as Milk, Eggs, Shell-fiſh, rough Wines, &c. 2. An Increaſing and Invigorating the Motions of the Solids and Fluids by much bodily Exerciſe and maintaining a plentiful Perſpiration. 3. Many acid and auſtere Meats and Medicines. The Manner how acid or auſtere Corpuſcles become a *Stimulus* to our Solids is, when theſe abound in the Blood, and it giving a Reſiſtance to the Solids, and they mutually reſiſting it again in the oppoſite Actions of each other, theſe ſharp *Spicula* have their Points darted into the Sides of the Veſſels, and ſeparate or wound the Fibres of the conſtituting Membranes. The Action of ſaline Bodies are moſt viſible and intelligible to them who conſider the Actions and Effects of *Cantharides*. But how this minute wounding, or Separation of a Fibre ſhould excite Pain, is only explicable by him that underſtands the *Modus* of the Union of our material and immaterial Subſtances.

Cauſes of a ſtiff Fibre.

31. The Cauſes of a ſtiff Fibre are, 1. A greater Quantity of Solids in Proportion to the Fluids. 2. The Blood is thicker and drier; their nervous Juice ſtrong, and therefore neither ſo fit in an Inſtant, *ad Nutum Animæ*, to inflate the Veſſels, nor ſo ſuſceptible, of a forcible Expulſion with Velocity. 3. The Veſſels themſelves are narrower, their Diameters ſhorter, and their Sides thicker; therefore muſt they give a greater Check to the ſpeedy Motion of the Blood and Juices.

How watry and fat Foods relax.

32. Watry and fat Foods relax the Fibres, 1. From a Want of a due Mixture of earthy Parts to correct thoſe, and repair our Loſs; and by their lubricating and moiſtening too much, whereby the Fibres become

come more ductile and extenſive, and loſe their Force. 3. By the watry Blood over-filling and ſtretching the Veſſels.

How rough and earthy ſtrengthen.

33. Earthy and rough Foods ſtrengthen the Fibres, 1. For they are made of fine earthy Particles, duly prepared and cemented together. 2. The earthy Aliments make the Blood drier and ſtronger, ſo as the Solids are not over-moiſtened and ſoaked in warm, watry and oily Juices. 3. Earthy Particles are moſt blunt and obtuſe, ſo as their Points neither penetrate, pain, or tear the Sides of the Veſſels, nor put the Fibres upon a *Conatus* of Contraction, and drawing nearer to one another, to expel the penetrating Body. *Corol.* 1. Hence we ſee the Reaſon why ſimple Foods are the moſt healthy and ſtrengthening. 2. And why a liberal and continued Uſe of the moſt earthy Foods are not the beſt for Attainment of Health and long Life. 3. And why the Uſe of earthy rough Foods anſwer the Recovery of a weak and lax Fibre and Veſſel ſo well.

How Aromaticks render the Fibres elaſtick.

34. Foods of Aromatick, light, ſeparable and volatile Parts render healthy Fibres elaſtick, becauſe they afford much and eaſily prepared nervous Juice to fill the Nerves, and ſerve for muſcular Motion; but are not ſo fit for Nutrition, becauſe Salts conſtitute no real Part of our Solids, and the volatile Parts are ſoon attenuated, prepared, and ſent off by Perſpiration and Urine. *Corol.* 1. Hence we learn the Unſuitableneſs of ſuch a Diet for the Cholerick, whoſe Juices are already too ſaline, pungent, volatile and ſubtile, for it dries their Fibres, and criſps them; makes their ſmall Veſſels grow up, and haſtens old Age and Death; diſpoſes their Bodies for the Reception and Suſceptibility of the iraſcible Paſſions, and helps to deprive them of the Serenity and Compoſure of their Minds. 2. For thoſe very Reaſons Nature indicates its Excellency to the phlegmatick, bulky, and dropſical, as it ſtimulates their Solids, attenuates and diſſolves their Fluids, promotes Perſpiration and Urine. 3. Here we ſee the beſt Diet for the Aged, to aſſiſt Nature in the Defect of Perſpiration, from a Sluggiſhneſs of both Solids and Fluids, and the Decreaſe of their minute Veſſels.

How too lax, ſtiff and elaſtick Fibres are to be altered.

35. Solids that are too ſtiff muſt be relaxed by thin, watry, and lubricating Food and Medicines, gentle Exerciſe, emollient Baths, Fomentations, Steams, *&c.* Such as are too lax muſt be ſtimulated, corrugated, and invigorated by aromatick, nervous, and volatile ſtrengthening Food and Phyſick, much Exerciſe, the cold Bath, and Abſtinence from too much Sleep, Indolence, Study, and Day Napps. Too elaſtick Fibres require nutritive Food, and ſomewhat tenacious, that their Spring be not too quickly worn out, and the Lamp of Life extinguiſhed.

36. Solids

How Solids differ in Reſpect of the Glands or Strainers.

36. Solids differ alſo in Reſpect of the Difference there is in the Veſſels and Strainers of ſundry Perſons. For ſome have large Veſſels, others ſmall; ſome have ſluggiſh and unweildy Veſſels, others active, elaſtick, and Tubes diſpoſed to Motion; others very ſtrong, but ſtiff and ſlow moving Canals; ſome have large adipoſe Veſicles, others ſmall; ſome have larger ſalival Glands than others. The Diameters of the renal ſecretory Veſſels are much longer in ſome than in others, whereby they drain off much more Seroſities and Salts from the Blood, and leave leſs for the Skin to do; hence are they more obliged to their Kidneys in Proportion, than to their cutaneous Glands, or their excretory Ducts. The Glands of the Liver are much larger and opener in ſome than in others, therefore have they more Biles. Some have their pancreatick Strainers larger than others. The lymphatick Veſſels are greater in ſome than in others. The Lacteals are larger and ſtronger in ſome than in others; therefore have they more Blood, if they eat good Food proportionable. Some Females have their uterine Blood-Veſſels larger, ſtronger or ſmaller, and weaker than others. Some have the Glands of the Brain more clear, open and large than others; hence a better Stock of nervous Juice, a more free and better Underſtanding, a leſs clouded or eclipſed Judgment; and ſo of the other Parts of the Body.

Solids differ in Reſpect of their Strength.

37. The Solids differ in their Strength according to the Activity or Indolence, Laborioufneſs or Lazineſs of the Perſons. For the Indolent, Studious, Idle, Luxurious, Intemperate, and *Venus*'s Slaves have more lax and weak Solids than the Laborious, Temperate, Chaſte, or ſuch as uſe daily Exerciſe.

38. The Solids of the ſame Perſons do often differ among themſelves in their Degree of Tenſion and Strength. For the Muſcles of ſome Members are ſtronger in Proportion than thoſe of the others; for ſome have the Heart ſtronger, others the Stomach and Inteſtines, or Liver, or Kidneys, or Lungs; others the Hands, ſome their Legs.

They differ in reſpect of their parental *Stamina*.

39. The Strength or Weakneſs, Soundneſs or Diſeaſedneſs, Stiffneſs or Elaſticity of the Solids do primarily depend upon the firſt *Stamina* the Embryo's of our Nature received from our Parents. This is the primary, mediate, or remote Cauſe of various Conſtitutions in different Perſons; and it is neither ſo unintelligible nor inexplicable as ſome have imagined.

Tenſion of the Solids vary according to the ſundry Stages of Life.

40. The Tenſion of the Solids varies in Reſpect of the different Stages of Life. For Infancy abounds with Humidities; its Fibres and Solids are lax, and the Body moiſt; but the Heart having a ſhorter Way to throw the Blood about, its Circulation is briſker, and its Motion heats the

Body. In this Period the Fibres are not ſo firm and ſtrong. 1. Becauſe of the Redundance of Moiſture in the Body. 2. Becauſe of the Laxneſs of the Veſſels themſelves. 3. Becauſe of their Want of Motion and Exerciſe. In Youth the Fibres are ſtronger, and the Blood thicker, but their Veſſels and Bodies being lengthened out, it has a longer Circuit to go, therefore is the Body more temperate, and the Pulſe ſtronger and ſlower. In Manhood the Elaſticity of the Fibres is at its Height, for now the Solids bear a greater or nearer Reſiſtance to the Fluids: This is the Meridian of Life, now all the Secretions and Evacuations are diſcharged beſt, and the Body being at its full Growth, and continuing ſome Years without either Increaſe or Decreaſe, this muſt be the Halcyon Term of Man's Days. In old Age the Fibres are become ſtiff and rigid, their Motion is ſlower, all the animal Actions are weaker, Evacuations are impaired, Secretions diminiſhed, and the Body turns cold and moiſt.

Conſtitutions alter'd into one another by our Food.

41. The Solids are alſo ſuſceptible of Alteration from the Nature of thoſe Eatables and Drinkables wherewith the Body is nouriſhed; thus a long and continued Courſe of earthy Food, and much Exerciſe will change a lax Fibre into a ſtrong. An obſtinate Uſe of tenacious and flatulent Food that conſiſts of very viſcid Parts, will turn a ſanguine Temper into a phlegmatick; for it overcomes the Reſiſtance of the Solids, and diminiſhes the brisk Motion of the Fluids, whereby they are leſs duly mixed, but being thin, watry and viſcid, generate Obſtructions in the ſmall Veſſels, turn the Body pale and cold; and in this ſlow Motion of the Fluids, the Blood is not prepared to paſs all the Strainers of the Brain, and have all its nervous and animal Juices ſtrained off for the Supply of the Solids. A phlegmatick Temper, by a tedious and liberal Diet of volatile, pungent Aromaticks, and Things eaſily ſeparable, commiſcible, and of quick Digeſtion, and producing Abundance of good ſoft balſamick Blood, full of fine animal Oyl, may be changed into a ſanguine. A ſanguine Conſtitution, by much Exerciſe, Abſtinence, ſaline and aromatick Foods, occaſioning a copious Perſpiration of thinner, watry Parts of the Blood, and an Invigoration and quicker Motion of the Solids, may be turned into a cholerick from the Salts in its Juices, and the increaſed Action and Agility of its Fibres. And a cholerick by much terreſtrious and thickening Foods, and an intenſe Uſe of the intellectual Faculties about the ſame Ideas may be converted into a melancholick. And that by Abſtinence, acrimonious Food, much Exerciſe, and frequent ſlight glancing on Ideas may become a cholerick.

By the Air.

42. The Climate alſo makes ſome Alteration in Conſtitutions. For a phlegmatick removed from a moiſt, marſhy, foggy, or woody Countrey,

to a clear hot and dry Air, by Temperance, Exerciſe, and a Diet ſomewhat detergent and balſamick will incline much to a ſanguine. A ſanguine Perſon removed from ſuch a thick, groſs, moiſt Air, and placed in a dry, hot and clear Countrey may come near to, or turn to a cholerick, if at the ſame Time he uſe an acrid Diet, and ſo of the reſt.

By the Paſſions.

43. Neither are the Paſſions without their ſenſible Effects upon our Bodies; for where the depreſſing continue long, frequently, and intenſely, they break the ſtrongeſt Conſtitution, weaken, relax, and load the Fibres and Veſſels; on the contrary, the elevating Paſſions give our Solids a *Stimulus*, and raiſe them above Nature, and put our Blood in a Hurry.

Tenſion of the Solids differ according to the different Sex.

44. The Difference of Sex is the laſt Thing I ſhall mention, which occaſions different Tenſions in the Solids; for Womens are generally more lax and weak than Mens, becauſe they are more liable to a *Plethora*, or Fulneſs of Blood, which is wiſely provided by the Author of Nature for the Nouriſhment of their Young. Idle, indolent, ſedentary and ſtudious Perſons have more lax Fibres than the laborious; Exerciſe accelerates the Motion of the Fluids, and promotes their Mixture and Secretion, and invigorates the Fibres. Hence Perſons who uſe much Exerciſe have ſtrong Fibres, becauſe the Reſiſtance of the Solids is anſwerable, if not in ſome Degree ſuperior, to that of the Fluids, whereby they are attenuated, mixed, and prepared for Nutrition, and all the natural and neceſſary Secretions; the Veſſels of the larger Glands have their ſuitable Vigour, and ſuffer no Stuffings, Obſtructions, or *Remora* in them.

A Fibre what.

45. To render what I have ſaid on the Solids more intelligible, it may not be amiſs to add, that a Fibre is an animal Thread, or nervous Sprig made up of ſolid Particles of Matter chiefly earthy. For none of the other Principles are capable of that *Conatus* or Tendency to cohere; and this inherent Force of Coheſion have all the Fibres conſtituting the Membranes, Veſſels and Solids of the whole Body.

The Cauſe of Coheſion.

46. The Cauſe of this Coheſion is the ſame in the little as in the great World, *viz.* the mutual Attraction of every Point or Particle of Matter in the Fibre towards one another, and the Cementation of the Particles with a delicate Oil.

Why the Parts have a Tendency to one another.

47. This Tendency of the Parts towards one another is preſerved by the fix'd Points of the Particles of the Fibre, and by the Circulation of the Fluids in the Veſſels, and the Counterbalance of the Attraction of the Antagoniſt Particles. And perhaps the Air may be of ſome Aſſiſtance in uniting our Solids; for, as Sir *Iſaac Newton* ſays, *Thoſe Particles will recede from one another with the greateſt repulſive Force, and are moſt diffi-*

difficultly brought together, do upon Contact cohere moſt ſtrongly. Qu. 31. And Mr. *Hales* ſays, *if the Attraction of Coheſion or an unelaſtick Air Particle be proportionable to its repulſive Force in an elaſtick State; then ſince its elaſtick Force is found to be ſo vaſtly great, ſo muſt that of its Coheſion be alſo.* Sir *Iſaac Newton* demonſtrates from the Inflection of the Rays of Light, that the attracting Force of Particles near the Point of Contact is 10000,0000,0000 greater than the Force of Gravity.

Cauſe of the different Coheſion of the Solids.

48. The Laxneſs or Solidity, Looſeneſs or Compactedneſs of the Fibres of Bones, Membranes, Veſſels, Muſcles or Cartilages, depend on the different Degrees of mutual Attraction, wherewith the Particles are combined; and as the Blood is a Mixture of various Materials, Nature curiouſly proportions this Mixture according to thoſe many different Uſes for which it is deſigned. The Reaſon of the Growth of Animals is the Tenderneſs of the Extremities of the capillary Veſſels; for they all terminate in a Fluid, while the Animal grows; for the very Bones where they are articulated with one another are tipped with a ſoft glutinous Cartilage, which when it turns to Bone, the Animal ceaſes growing, and when the Extremities of the capillary Veſſels become ſolid Membranes, their Elongation is at an End, and an Animal continues at that Growth, till they collapſe, ſhrink up, and the leaſt Veſſels degenerate into Fibres; then the Animal declines.

Why the Veſſels reſiſt the Fluids.

49. The Force or Reſiſtance of a Solid againſt its Fluid, is, 1. Only the *Conatus* or Tendency of its Fibres to come cloſer or nearer together, and oppoſe the Exiſtence of a Space, and expel the Fluid contained in the Veſſel. 2. The Change of the Veſſel's Site or Poſture; for when the Veſſels are ſtraitned, the Particles of the Fibres touch upon larger Surfaces or Points, act with more Force, and expel the Fluids more vigorouſly. *Corol.* The ſhorter then the Diameters of the Veſſels are, they act with ſo much more Force upon the Fluids; and on the contrary, the larger the Cavities of the Veſſels are, they act with the leſs Reſiſtance. *Schol.* 1. Hence appears the Reaſons of the Blood's Circulation in the ſmalleſt Veſſels, ſited at the greateſt Diſtance from the Heart. *Schol.* 2. Hence we ſee the Reaſon why Nature has not provided large Baſons for receiving the Blood from the capillary Arteries on the Body's Surface and Extremities, but returns it by ſundry Ramifications of ſmall Veins uniting and dividing ſeveral Times till they reach the *Cava. Schol.* 3. Here we have the Reaſon why if one Branch of a Vein be obſtructed, the Courſe of the Blood is not ſtopp'd, but the other Branches ſupply its Place till the Obſtruction be removed. *Schol.* 4. Hereby we can account for the Difficulty in removing Tumours placed in the ſmalleſt Veſſels, ſuch as the lymphatick Glands, *&c.* *Schol.* 5. Hereby we ſee

why ſchirrhous and carcinomatous Tumors are ſo inveterate, and moſtly fatal Evils; for not only are the ſmall containing Veſſels ſtretched out beyond their Tone, but the diſtending Matter is ſo thick, earthy and ſtrong, that it is impoſſible for the Veſſels to attenuate and diſſolve it; and with this Thickneſs Cancers have an Acrimony joined, which often corrodes the Veſſels and Parts adjacent. *Schol.* 6. This ſhews us why an *Aſcites* is the moſt tedious Sort of Dropſy (except the *Hydrocephale)* to deal with, even where there is no Rupture of the Lymphaticks.

Difference of Conſtitutions from the Fluids.

50. The ſecond Cauſe of the Diverſity of humane Conſtitutions ariſes from the Fluids, and this is from the Prevalency of their different Principles, or their Diſpoſition to run into various Combinations or Coheſions.

Principles of the Blood.

51. The Blood conſiſts of Phlegm or Water, Salt, Sulphur or Oil, and Earth: The Quantity of the firſt is naturally the greateſt; the ſecond next to it; the third is of a leſs Quantity than either of the other two; and the laſt is leaſt of all. Which of theſe four Principles ſoever happens to be the ſuperior, it is juſtly reckoned the Predominant, be its Quantity what it will; ſo that the Temper of the Blood conſiſts in a due Proportion of the Quantity and Quality of thoſe Principles. For if the Oil of the Blood abſorb its ſaline and earthy Part, and its Proportion is more plentiful than its Salt: On the contrary, when the Salts diſcover themſelves in the ſmall Veſſels, either by Taſte or other Effects, they are the predominant Principles. If the Phlegm ſo diſſolve the Salts and Earth, that they ceaſe to act their juſt Part, it is the moſt powerful Principle. If Earth exceeds its Quantity, it thickens the Blood, and is Maſter.

Cauſes of its too great Fluidity.

52. Too great a Fluidity of the Blood is occaſioned, 1. When its Particles are ſmaller than they ought to be. 2. When they have not a due Tendency to cohere with one another.

53. The Smallneſs of its Particles, and too great Fluidity proceed from its Mixture of Things more capable of Separation than the Particles of the Blood; ſuch are all volatile Salts and Spirits diſtilled, Cordial Waters, and ſtrong Cordials, as Saffron, Cochineal, *Contrayerva* Root, &c. or mineral Salts, and all mercurial Preparations.

54. This Fuſion of the Blood firſt happens in the larger Veſſels, and is communicated by them to the ſmaller, lateral, and ſecretory Ducts, from which it exhales ſo copiouſly, that Weakneſs and Faintneſs muſt enſue, through the Incapacity of the Veſſels to retain ſuch minute Particles, from plentifully and powerfully eſcaping, either through the Interſtices of their Fibres, or excretory Ducts. *Corol.* 1. Hence we know

what to think of the hot Regimen in ardent Fevers, where the Skin is dry and parched, the Tongue and Mouth black, the Pulſe very quick, and how near it approaches to Manſlaughter. 2. Here we learn the Effects of immoderate Tea-Drinking, eſpecially with Tincture of Saffron, or Drams after it.

Cauſes of its too ſlow Motion.

55. The Blood's ſlow Motion is either, 1. Becauſe its Particles are too large to paſs the ſmalleſt Veſſels; or, 2. From its Principles being ſo entangled together, as not to be readily diſſolved: Both thoſe fill, ſtraiten, or ſhut up the Veſſels. If this ſlow Motion happens firſt in the large Veſſels, it cauſes Polypus's in the Heart, and thoſe Veſſels. If it fall out in the ſmall Tubes, it produces Stagnations, which either are cured with Difficulty, or end in Inflammations, Abſceſſes, Gangrenes, Schirrus, Cancer, or Mortification, according to the Nature of the pent up Humour; and in the lymphatick Veſſels it is followed with ſizy Obſtructions of a white Phlegm; or if it happen in the ſmaller Lymphaticks, Dropſies of all ſorts enſue, which, if they continue long and greatly encreaſe, will excoriate and diſcharge an ichorous Matter, ſo as to emaciate and kill the Body. We ſeldom meet with a Viſcidity in the nervous Juice, for that is contrary to the Delicacy of the Tubes which ſtrain it off, and alſo to the Subtility of the Liquor it ſelf, and the Rapidity of its Motion. Yet it is not wholly excuſed from this Conſiſtence, as we ſee from the Loſs of both Senſe and Motion of the Parts.

Cauſes of its encreaſed Circulation.

56. An increaſed Circulation of the Blood is owing to the oftner and ſtronger Contraction of the Heart and Veſſels; and this comes either, 1. From the Brain and *Cerebellum* being too ſtrongly preſs'd, and thereby made to ſend forth the nervous Juice in too great Quantity, or too forcibly, as we ſee it happens in Pains or Paſſions of the Mind. 2. When the Heart it ſelf is irritated by the Acrimony of the Blood.

Cauſes of a *Plethora.*

57. The Cauſes of a great Quantity of Blood in the Body are, 1. Feeding freely on ſuch Things as afford much Chyle and good Blood; or, 2. Living on ſuch Things as are tenacious, and breed much Blood; but its Attenuation, Mixture and Evacuation is ſlow, becauſe it is difficult to be digeſted. 3. A great natural Strength in the Bowels and Veſſels of this Chylification, and in the Heart and Arteries, but a Weakneſs in the Veins and other ſmall Veſſels.

Effects of its too great Fluidity.

58. When the Blood is too fluid, copious Evacuations of all ſorts, large Stools, much Urine, Spittle, and Perſpiration enſue, the Body turns lean, weak, thirſty, and inclin'd to Motion.

Effects of much Exerciſe.

59. The Blood of ſuch as have ſtrong Fibres and Veſſels is thick, yet ſoft and kind; ſuch People uſe Exerciſe, which ſtrengthens the Fibres, by attenuating, mixing, and propelling the Blood; ſo as it is fitted to

paſs all the Strainers of the Body, eſpecially thoſe of the Brain, whereby much animal Juice is ſeparated, which ſerves both for Action and Nutrition; the thicken'd Humours are diſſolv'd, the Sluices of Evacuation are ſet open in a healthy Manner, and ſuch Labour or Exerciſe is ſo far from diſſipating the Spirits, or weakening the Body, that the firſt is encreaſed, and the laſt invigorated. But for the ſame Reaſon any Exceſs in theſe will ſtiffen the Fibres, ſhut up the ſmall Veſſels, dry the Body, and bring it ſooner to its End; ſo that although much Labour or Exerciſe be conducive to Health, yet is it not to long Life.

State of weak Peoples Blood.

60. On the contrary, the Blood of weak and tender People is light, thin, broken and ſharp, from the Incapacity of the Solids, to put and preſerve the Blood in a right Motion for Attenuation and Mixture.

Cauſes and Effects of its Viſcidity, according to *Boerhave*, and the late Mechanicks.

61. A Viſcidity of our Humours begets Want of Appetite, Indigeſtion, a ſtuffing at the Stomach, Loathing of the Food, Vomiting, the Bile is ſluggiſh and ſlimy, the Stomach and Inteſtines are furr'd up with ropy, tough Phlegm, the Belly is coſtive, the Chyle is ſent crude and unprepared into the Lacteals, which cauſes a tough pale Blood, incapable of Circulation; hence Obſtructions and Concretions in the Veſſels, the Urine pale and almoſt inſipid, ſeveral white Swellings appear, all the Secretions are marr'd, the ſmalleſt Veſſels ſhut up and grow together. This gelatinous State of the Blood ariſes from a too free Uſe of crude and mealy Aliments, and unripe rough Fruits, or from a Deficiency of good Blood in the Body, or a Laxneſs and Weakneſs of the Bowels and Veſſels, and a Defect or Thinneſs of the Bile; and a Diminution of animal Motion, or an immoderate Evacuation of the more watry Parts of the Blood through the weak and lax Strainers, and thereby follows a Retention of the thicker Parts of the Blood and Humours; hence Obſtructions and white Tumours.

Cauſes and Effects of an acid Acrimony.

62. The Acrimony of the Blood is of four Sorts, *viz.* Acid, alkalious, oily, and muriatick. An acid Acrimony is manifeſt from an acid Smell and Taſte, ſour Belchings, Hunger, gnawing Pain of the Stomach, Cholicks, Flatulency, and Convulſions in the Inteſtines, Inactivity of the Bile; the Chyle and Excrements ſmell ſour, and the *Serum* of the Blood has the ſame Taſte; the whole Body looks pale, and is perplexed with Obſtructions, Itchings, Eroſions, Eruptions, Ulcers, Coagulations of the Blood, Twitchings of the Brain and Nerves; hence Convulſions, and a Stop put to the Circulation. This Humour is occaſioned from much mealy Aliment, acid Juices, either new, crude, or in the Ferment, or already fermented; or by a want of good Blood in the Body fed with that Food, or laſtly from a weak and lax Structure of the Fibres and Veſſels.

Cauſes and Effects of an alkalious Acrimony.

63. An alkalious Acrimony diſcovers it ſelf by Thirſt, Loſs of Appetite, ſtinking Belchings, a fetid, cadaverous Scent; the Mouth, Tongue, Palate and Throat taſte of putrified Urine; there is a Loathing and Vomiting of putrid bilious Matter; the Belly is looſe, and diſcharges much Choler, the Stools are ſhining, black or dark coloured, and of a moſt intolerable Stench; there are Iliack Pains, and great Heat in the Belly; an inextinguiſhable Thirſt; black, livid, or brown coloured Eroſions break out, and ſpread on the Body; Urine is fetid, ſharp, thick, brown and frothy, with little or no Sediment; there is little Sweat, and that is alſo fetid; the Skin is dry, the Blood is thin, florid and diſſolved, ſcarce coagulates; it is oleous and volatile, unfit for Nutrition, but conſumes and deſtroys the ſmall Veſſels, diſturbs and deſtroys the Function of both Solids and Fluids; Circulation, Secretions and Evacuations are no longer regular; burning Fevers with fetid Diſcharges enſue; Gangrenes, Buboes, and Purple Spots, ſudden Inflammations, Mortifications and Bliſters bring up the Rear. This Acrimony is cauſed by a too free Uſe of ſuch aromatick Plants as have a ſharp Taſte; for thoſe being putrefied, melt into a ſtinking fat Alkali; or by living upon animal Food, fed by Animals of another kind, ſuch are all amphibious Creatures, Birds, Fiſhes, Beaſts and Reptiles; or by a Plenty of ſuch Blood as already tends to Corruption. A great Strength of the Bowels and Veſſels, and much Bile, contribute to the ſame.

Cauſes and Effects of a muriatick Acrimony.

64. We know the Prevalency of a muriatick Acrimony from a Salt Taſte in the Mouth, an Itching and Redneſs on the Skin, great Thirſt, Roughneſs and Dryneſs of the Body, Urine full of Salt, with much Sediment, and a fat Scum; it will ſcarce putrify or ſtink: This proceeds from an immoderate Uſe of Sea Salt, pickled Meat, and Meat dry'd in the Smoak, or of Salt, of the Nature of Sea Salt.

Cauſes and Effects of an oily Acrimony.

65. We are ſatisfied that an oily Acrimony prevails in the Blood, when there is a Taſte in the Mouth like that of burnt or putrefied Oil, bitter, rancid and ſharp, and a great Heat in the Jaws, and a Belching which ſmells like rotten Eggs; the Stomach loaths its Food; Stools are white, fat, ſtinking, and very hot in the *Anus*; the Urine is ſcanty, frothy, fetid, and flame coloured, the Mouth and Skin are dry, and the laſt is often ſet with a fetid Scurf, the Blood is dried up with Heat, the Body is often attacked with acute, ſudden, and ſtubborn Inflammations and Suppurations, and often moſt fetid Gangrenes. This Acrimony owes its Birth to a too plentiful Indulgence of fat Meat, Butter, Oil, and oleaginous Fare, and very fat gravy, *&c.*

How all theſe are cured.

66. A predominant Acidity of the Juices is cured by Diluters, Abſorbents, Strengtheners, Exerciſe, and whatever begets good conditioned Blood. An alkalious Acrimony requires Acids, Diluters, Abſorbents, ſoapy detergent Medicines and Reſt. A Viſcidity of the Juices indicates the Uſe of Things well fermented and ſalt, Corroboraters, Diluters, Reſolvers, Stimulators, Exerciſe, ſoapy Medicines, with Friction and Bliſtering. An oily Acrimony calls for Acids, Coolers, Diluters, and ſoapy Things. A Blood too Fluid, ſhould have the Motion of its Solids encreaſed: Terreſtrious Things, Thickeners, and Aſtringents are needful here. A muriatick Acrimony muſt have an inſipid, watry Diet, without Salt, but a little acidulated and diluting, and lixivious Medicines. A viſcid Blood is attenuated by Diluters, gentle Evacuations, Chalybeats and Bitters (if there be neither a *Plethora*, nor Inflammations to forbid them, and in that Caſe black Hellebore comes in the Room of Steel) and good Exerciſe. If too thick Blood, it is thinned by Diluters, gentle Catharticks, and ſuch Things as diſpoſe its Parts to a briſker Motion, Reſt, thin and ſomewhat ſtimulating Diet, *&c.*

Thus, MADAM, I have attempted both the Solution of your Ladyſhip's Queſtion, and at the ſame Time to give the beſt Account I am capable of the many Cauſes of the Variety of humane Conſtitutions both as to Solids and Fluids, whether they be natural or adventitious; which if agreeable to your Ladyſhip, and uſeful to the World, I have my End, and my Labour fully compenſated.

I am, MADAM,

Your Ladyſhip's

Moſt Humble, moſt Obliged,

and Obedient Servant,

THO. SHORT.

B L

NOTES *upon Sect.* 39.

1. SI maxime laxæ, vel dilatabiles ſint ovi fœminei Membranæ vel Tunicæ; vel ſi Fluida in ovo contenta, perſeroſa, mollia & lubrica ſint; aut ſi nimiis ejectionibus, præcipue voluntariis, vel Tenuitate vaſorum ſecernentium, aut Inopia Sanguinis per Arterias ſpermaticas ad Teſticulos delati; aut a Glandularum Teſticularium Laxitate, Obſtructionibus, Inelaſticitate, vel a Veneris Diſſuetudine, vel Abſtinentia, Sperma Maſculinum pertenue, paucum, inſipidum, minus præparatum, aquoſum, &c. eſt; vel ſi Glandularum uteri, in Coitionis, Conceptionis, Geſtationiſve Tempore, adſit nimia Laxatio vel Imbecillitas, ſeroſi Liquoris in Uteri Cavitatem copioſa ſequetur Evomitio, quæ certo Semen virile, & Liquorem in Ovo contentum, maxime diluet, & Ovi Membranas, Embryoniſque Tunicas laxabit; hinc orientur Vitæ laxa Stamina, Fibriſque mollibus & morboſis naſcetur Infans indutus.

2. Si e contra Ovi vel Ovarii Tunicæ bene & firmiter connexæ ſint, ſalubriſque craſſioriſve Conſiſtentiæ eorum ſucci; ſique optime præparatum, album, ſpiſſum, partibuſque ſalubribus & terreſtribus abundat Semen maſculinum, nec Veneris illicitæ Labem continet, ſique Salis Tartaris, in Manu cum Aqua calida diſſoluti, odorem referat; eodemque Tempore Fœminæ ſanguis, ſeroſitate nimia, vel tepido, molli, lubrico, inſipido, & pinguifero Liquore non repletur, nec multum ſeri ſecernentes uteri Glandulæ laxæ, nec Geſtationis ſpatio, cibis aut potis aquoſis nimis aut laxantibus indulgebit Mater, concipietur Embryo, & naſcetur Infans firmis ſaniſve ſolidis.

3. Si partibus ſulphureis, mollibus & flexis, aliiſve principiis prædominantibus abundat ſemen virile, ſique ſanguis Maternus, cæterique corporis, ovorum, & uteri ſucci ejuſdem ſpeciei ſint, Embryo & Infans Fluidis balſamicis, oleoſis, & mollibus indutus concipietur.

4. Si cujuſcunque ſpeciei, in ſanguine & ſpermate parentis Maſculini, ſal prædominabit, ſique habebunt Matris Fluida eadem ſalina corpuſcula prevalentia; cum a Liquidis parentum Fluida recipiet Embryo, in ejus ſuccis primis eadem prævalebunt, quæ in parentum Fluidis, Generationis, & Gravidationis Tempore ſuperaverant.

5. Si a maxime ſeroſis Fluidis primaria Liquida recipiet puer, perſeroſus & pertenuis erit ejus ſanguis; impoſſible enim eſt, parentes Liberis ſuccos ſalubriores communicare quam in Corporibus ſuis Generationis Tempore exiſtebant. Hinc Cholericum Cholericus, Phlegmaticum Phlegmaticus, &c. gignet; qui tamen Nonnaturalium proprio & obſtinato uſu in Conſtitutiones alias mutentur.

6. Si aliqua vaſa, vel Glandulas anguſtiores, vel laxiores in quavis Corporis parte habet Pater, i. e. Si obſtructionibus, ſtagnationibus, ſtimulationibus, coagulationibuſve, in Cerebri Glandulis, pedum Nervis, totius Corporiſve Lymphaticis obnoxius eſt Parens Maſculus; a vaſorum illorum Laxitate, Dilatabilitate, Tenuitate, vel Diametrorum Longitudine, vel Brevitate, vel a Fluidorum, per vaſa illa facile circulare ineptitudine, vel a variis Attractionibus, Cohæſionibus, vel Liquidorum Combinationibus. Cum Sperma a Fluidis illis ſecerni oportet, Attractionibus ejuſdem Generis obnoxium erit, ſtaminaque talia conſtituet, ſive in Nervis, aut Glandulis, vel Lymphaticis. Hinc Apoplecticus Apoplecticum, Paralyticus Paralyticum, Aſthmaticus Aſthmaticum, Strumaticus Strumaticum, Phthyſicus Phthyſicum, Podagricus Podagricum gignet.

This Chain of Reaſoning will readily help us to account for ſeveral Things of this kind, which ſeem very difficult; as how Diſeaſes become hereditary? Why Parents may at ſome Times beget Children of Conſtitutions quite different from their own, *&c.* which the Ingenious will eaſily diſcover, but the Stupid never can.

The Reader is deſired to correct the following Errata *occaſioned by the Author's Abſence from the Preſs.*

PAGE 2. Line penult. *for* Sex, *read* Sexes. p. 3. l. 24. *for* crumbled *r.* crumpled. p. 3, and 4. *for* Trigantius *r.* Trigautius. p. 4, 5, 11, 12. *for* Kempſer *r.* Kempfer. p. 5. l. 3. *for* Diſcourſe, *r.* Deſcription of the Plant and its Leaf. p. 11. l. 14. of the Notes *for* Mauvi *r.* Mauri, *or* Maurigaſmia. p. 12. l. 11. *for* Sbrub *r.* Shrub. p. 15. l. 5, and 34. *r.* Copperas. p. 22. l. 14. *for* heighth *r.* height. p. 28. Notes Col. 2. l. 35. *r.* Colour precipitated much, p. 34. l. 3. *r.* diſſolvible. p. 39. Notes Col. 2. l. 13. *r.* expreſſing. p. 40. Col. 1. l. 5. *r.* irritating. p. 73. l. 14. *r.* Ægineta. p. 81. l. 15. *for* the *r.* tho'. p. 93. l. 37. *for* Graſs *r.* Grape. p. 96. l. 14. *r.* Molocco's. p. 102. l. 32. *for* Caſt *r.* Caſe. p. 105. l. 2. *r.* Oſſification. p. 110. l. 12. *for* Biles *r.* Bile. p. 112. lin. penult. *for* will *r.* which.

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